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# ***JPRS Report***

# **Nuclear Developments**

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# Nuclear Developments

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## SOUTH AFRICA

**Academics Discuss 'Nuclear Option' for Missiles**  
MB2206111589 Johannesburg *THE STAR* in English  
22 Jun 89 p 11

[By military correspondent Craig Kotze]

[Text] South Africa has the technology and capability to manufacture ballistic missiles, experts say. It is also widely believed that South Africa has the capability to make nuclear bombs.

But experts believe it would be counter-productive for South Africa to actually arm ballistic missiles with nuclear warheads, for both political and economic reasons.

Far better, they say, to arm a system such as the Jericho II with a conventional (explosives) warhead and to use it to fill the gaps in South Africa's Air Force armoury, such as the lack of heavy bombers.

Another reason which could spur South Africa to make such missiles would be to sell on the international arms market, where there is a huge demand for these deadly weapons and where Armscor [Armaments Corporation of South Africa] would find a ready market. Armscor is already far-advanced in missile technology.

The capabilities of long-range missiles, with conventional warheads, used by countries outside the super-power arena was graphically illustrated by the devastating "War of the Cities" between Iran and Iraq. Both sides bombarded cities with missiles similar to that South Africa and Israel are said to have made, shattering morale and bringing industry to a standstill. Missiles are relatively inexpensive and are extremely difficult to counter. The only adequate countermeasure would seem to be a missile armoury of your own.

"There is a great demand for these missiles in countries like Iran and Iraq. Someone may even have asked South Africa to develop such a missile for them.

"Possessing such a system would not necessarily mean it would be used exclusively by South Africa," said Professor Deon Fourie, Strategic Studies expert at the University of South Africa.

"Missiles could be used on enemy formations in the field. They are exceedingly difficult to counter. If loaded with conventional warheads, they could take the place of a heavy bomber force, which South Africa never developed.

"Bombers are difficult to protect and in South Africa's case such losses could not be afforded," he said.

The nuclear option for South African missiles would bear an extremely expensive political price-tag, especially in relations with relatively friendly countries such as Britain.

According to Professor Mike Hough of Pretoria University's Strategic Studies faculty, reports on South African/Israeli testing of a Jericho II version would rekindle the debate on whether South Africa has nuclear weapons or whether it intended signing the Nuclear Proliferation Treaty drawn up to curb their spread.

Says Professor Fourie: "The West is extremely frightened about the spread of nuclear weapons and an outbreak of nuclear war in smaller countries. One of the reasons is that no-one could be sure who was responsible for dropping nuclear bombs in such a war and accusations could be levelled at America and the Soviet Union.

"Should South Africa ever threaten to use such a weapon, countries such as Britain would immediately break off relations."

The American Central Intelligence Agency (CIA) has estimated that 15 developing countries will have ballistic missiles by the year 2000.

Professor Fourie said South Africa had no need for such nuclear weapons.

"What would we do with them? Eliminate Harare or use them against the ANC [African National Congress] inside South Africa? Far better to channel resources into conventional forces," he said.

**Armscor Reacts to New Missile Test Launch**  
51000005 Johannesburg *Television Service* in English  
0500 GMT 21 Jun 89

[Text] THE WASHINGTON POST newspaper reports that South Africa is soon to test launch a new intermediate range ballistic missile with the help of Israel.

Quoting unnamed American intelligence officials, THE WASHINGTON POST said the missile was a modified version of the Israeli Jericho II IRBM and had been detected by American intelligence agencies at Arwiston, a test range on the Cape south coast. The report claimed that the missile was said to be in its final stages of development and that the first test launch could take place over the Indian Ocean within the next few weeks.

In reaction, an Armscor [Armaments Corporation of South Africa] spokesman said it was well known that Armscor was developing a missile test range at Overberg. He said the range had been under development over the last 6 years and was, at present, being qualified. This meant that Armscor was firing missiles in order to test the performance of the range.

He said South Africa was strong in the missile field and had produced several missiles of repute. For obvious reasons, Armscor was not prepared to disclose any details of its qualification program and would, therefore, not comment on any speculation.

**ESKOM To Sign Nuclear Agreement in Moscow**  
*MB2706093089 Johannesburg SAPA in English  
0928 GMT 27 Jun 89*

[Text] Johannesburg, June 27 (SAPA)—ESKOM [Electricity Supply Commission] is to sign a “world nuclear power agreement” in Moscow according to a press statement by the company’s communication department.

“This is possibly the most significant development in world nuclear power cooperation and safety yet seen—its importance is hard to overestimate,” the statement said.

A communication department spokesman, Laetitia van Staden, told SAPA it was clear some members of the press had endeavoured to preempt this afternoon’s announcement on the historic accord.

“It’s quite clear they got their information from the invitation,” she said.

**Pull-Out of Daya Bay French Engineers Reported**  
*HK0207024589 Hong Kong SUNDAY STANDARD in English 2 Jul 89 p 1*

[By Karl Ho]

[Text] A team of 12 senior French engineers responsible for the reactor installation at the Daya Bay Nuclear Plant has pulled out from the \$29 billion project, The SUNDAY STANDARD has learned.

The engineers were reported to have been key men in the installation of the two reactors.

They left the site during the past two weeks, ostensibly for their summer vacations, but a Chinese staff member at the site said they had indicated that they would not return.

The staff member, who insisted on not being identified, quoted one of the engineers as saying that the team would be replaced by a team of about 30 engineers to complete the remaining work.

He said the French engineers' departure had nothing to do with the recent unrest in China.

He quoted one of the French experts as saying their withdrawal had arisen from a breakdown of relations between them and their Chinese colleagues.

"They said they could no longer put up with their Chinese colleagues who could not be relied upon to meet any standards," he said.

"There were too many differences between the two parties in working style and attitudes," he quoted the French as saying.

Relations between the French and their Chinese partners have been deteriorating since before the plant's missing rod blunder last year, he said.

An official of the company responsible for transporting the engineers' belongings from Daya Bay confirmed that all the 12 French had left Daya Bay with their families.

The official said the engineers had visited Hong Kong before going home.

"The last of the French engineers left the site last Thursday," the official said.

The French company responsible for manufacturing the two 900-megawatt nuclear reactors, Framatome, could not be reached last night to confirm if it employed the engineers.

But a spokesman for the main contractor, the Guangdong Nuclear Power Joint Venture Company (GNPJVC), denied any French engineers had left.

"It is all a rumour. No foreign engineers have left the site and everything is progressing perfectly according to the schedule," Mr Che Chen-yu, head of the Public Relations Department of the Company said.

**Daya Bay Construction Said 'Problem Free'**  
*HK1706062389 Hong Kong SOUTH CHINA MORNING POST in English 17 Jun 89 p 4*

[Text] Construction of the Daya Bay nuclear power station is continuing problem-free, despite recent upsets in China, according to the French firms building the plant.

Framatome and Electricite de France (EDF) said no incidents had occurred at the site during the Chinese troubles.

Framatome chairman Jean-Claude Leny said: "The situation is normal."

EDF sources said: "All French engineers are present and are working normally."

The project involves two reactors and is situated just over the Hong Kong-China border. Framatome is responsible for the reactor tank, EDF for technical direction and studies, French firm Campenon Bernard for civil engineering and General Electric of Britain for the turbines.

The main contractor is Guangdong Nuclear Power Joint Venture Company, with 25 percent capital from Hong Kong and the rest from China.

Project participants hold regular meetings. The next one is expected next week.

**Guangdong Nuclear Plant 'Delayed or Cancelled'**  
*OW2306134789 Tokyo NHK General Television Network in Japanese 1000 GMT 23 Jun 89*

[Text] The construction of the largest nuclear power plant in China, Dayawan Plant, is expected to be substantially delayed or cancelled due to the turmoil in that country. The Dayawan plant is under construction in Shenzhen, Guangdong Province. It is an extensive project considered to be a symbol of open policy of the nation. The maximum output of the plant, if completed, is estimated at 1.8 million kw. The \$3.5 billion project kicked off in June, 1987. The project was expected to be completed in 4 years.

The technical licensing agreement on power generators was concluded between China and Britain. France has agreed to provide the necessary nuclear reactor technology.

Seventeen private banks in Japan, the United States and Britain advanced \$220 million in loans for the project. Chinese authorities have already requested a secondary joint investment.

However, many people say that France and Britain would probably tighten their regulations on exporting nuclear power generator facilities to the communist bloc. This will comply with the stipulations of COCOM—the Coordinating Committee for Export to Communist Countries—because the political conditions in China are unstable. COCOM regulations restrict exports of strategic products to the communist bloc.

**Nuclear Plants' Construction on Schedule**  
HK2306093989 Beijing CEI Database in English  
23 Jun 89

[Text] Hangzhou (CEI)—Construction for the Qinshan nuclear plant in Zhejiang province and Daya Bay nuclear plant in Guangdong province are proceeding as scheduled.

Jiang Xinxiang, general manager of the China Nuclear Industrial Corporation, said the scheduled pace will be strictly followed.

He added that foreign cooperation in nuclear industry and China's goal of extracting 6 million kw of power from nuclear plants by the end of the century will not be changed.

According to the general manager, 5,000 Chinese workers and 800 foreign experts in Daya Bay plant have stayed at their posts during the unrest in Beijing. A coordination conference with experts from France and Britain scheduled for June 19 in Shenzhen took place as planned, he said.

Meanwhile, construction in Qinshan is also going on well. The Chinese-foreign negotiations about 600,000 kw of generators for the second stage will continue later in the month.

## JAPAN

### Facility To Assess Nuclear Power Impact on Environment

OW2906213589 Tokyo KYODO in English  
1129 GMT 29 Jun 89

[Text] Aomori, June 29 KYODO—The Science and Technology Agency is considering establishing a facility to assess the impact on the environment of radioactivity from nuclear power plants in Rokkasho, Aomori Prefecture, agency head Kishiro Nakamura said here Thursday.

Nakamura disclosed the idea at a press conference after inspecting a nuclear waste-recycling plant being built at Rokkasho, a village east of here facing the Pacific.

Nakamura said his agency plans to construct a nuclear research foundation in the village, while upgrading the local branch of the state-run Japan Atomic Energy Research Institute there.

In addition, the advance of nuclear power-related firms into the same community will be promoted, he said.

These plans are in accordance with requests from the Aomori Prefectural Government pushing for the centralization of nuclear power facilities, he said.

The foundation will be established with a special account for the development of electric power resources for fiscal 1990, Nakamura said.

The director general also said his agency will step up a "grass-root" publicity campaign to win support for the agency's plans from local people in Aomori Prefecture and, as a concrete step, invite them to inspect a waste nuclear-fuel reprocessing plant in Tokaimura, Ibaraki Prefecture, at some point in the future.

Nakamura also inspected Japan's first nuclear-powered ship, the Mutsu, now undergoing repairs at Sekinehama Port in Mutsu, north of Rokkasho.

## SOUTH KOREA

### Memoranda With Canada on Nuclear Materials 'Retransfer'

SK2306071689 Seoul YONHAP in English  
0647 GMT 23 Jun 89

[Text] Seoul, June 23 (YONHAP)—South Korea and Canada exchanged memoranda allowing the retransfer of nuclear materials Friday, a Foreign Ministry spokesman said.

The two governments will allow each other to retransfer "specific" nuclear materials to a third country under agreed terms without prior written consent.

Korea and Canada have forbidden retransfer since 1976 under an agreement on cooperation in the development and application of atomic energy for peaceful use, the spokesman said.

## INTRABLOC AFFAIRS

### CEMA Confers on Nuclear Public Relations

LD2006192889 Moscow TASS in English  
1856 GMT 20 Jun 89

[Text] Moscow June 20 TASS—The problem of ensuring radiation safety at nuclear power plants and of dumping radioactive waste is especially acute in the present-day world, Aleksandr Protsenko, chairman of the USSR Committee on the Use of Atomic Energy, has stated. He spoke on Tuesday at the opening of a conference of the CMEA member states on work with public opinion in the sphere of nuclear power engineering. We cannot ignore public opinion, he pointed out. Under the impact of public opinion the construction of a number of nuclear power plants was suspended in the past several years.

The conference is being attended, aside from Soviet specialists, by representatives of Bulgaria, Hungary, the GDR, Poland and Czechoslovakia.

Sergey Yermakov, a senior executive from the Soviet public information centre under the interdepartmental council for information and public relations, spoke about his experience of work with the population in this sphere. He pointed to the need for a more responsible approach to the construction of nuclear power plants and the choice of a site for them. Two years ago systematic and consistent work was started for informing the population on all the problems connected with nuclear power engineering. At present a "data bank" is being created. According to Yermakov, they regard as their main task the dissemination of basic information about nuclear power engineering among all the sections of the population. In his opinion, a common stand will be worked out in the future jointly with the public through overcoming misunderstanding and antagonism.

Jan Kubit, director of the Polish department for public information and the training of the personnel, told the conference that in Poland they were gradually overcoming the population's mistrust for all that is connected with nuclear power through the everyday arduous work with the public. Other representatives of socialist countries also told the conference about their experience of work in this sphere.

## BRAZIL

### Atomic Residues Removal to Final Site Planned

*PY2806010089 Brasilia Domestic Service in Portuguese  
2200 GMT 27 Jun 89*

[Text] The National Nuclear Energy Commission has announced that the atomic waste will be removed from Goiania. Radioactive residues from the accident that occurred with a cesium capsule will be removed from the city of Apaciana, Goias State, by the end of this year. The atomic waste is now being stored in scores of drums, mixed with lead and cement, and it is causing apprehension in the population.

The president of the National Nuclear Energy Commission, Rex Nazareth, said today in Goiania that by the end of this year the radioactive residues from Apaciana will be removed to a final dumping site. According to him, that site will be chosen in an area which will cause the least environmental and socioeconomic problems. The operation will be conducted without any secrecy. He added that it should be made very clear that the waste now stored in Goias does not pose any risk whatsoever for the community. Rex Nazareth said that he has a certificate issued by (?CNEA) technicians, and that the inhabitants of that area need not concern over this matter since there is no safety risk.

## INDIA

**Commentary on U.S. Nuclear Policy Contradictions**

*BK2606123189 Delhi General Overseas Service  
in English 1010 GMT 26 Jun 89*

[Ragha Mohan commentary: "U.S. and Nuclear Program in Pakistan"]

[Text] The world can only take a dim view of the verbal exercises of the Bush administration on the issue of Pakistan's nuclear weapon program. The recent visit of Pakistan's prime minister, Ms Benazir Bhutto, to Washington has once again brought into focus the many contradictions in the U.S. nuclear policy. The central contradiction is in the very U.S. approach to nuclear weapons. The United States insists, as it did most recently at the NATO summit in Brussels, that Western security must, for the foreseeable future, be based on nuclear weapons.

Washington dismisses India's call for the total elimination of nuclear weapons as unrealistic—the dreams of a denuclearized Europe. At the same time, Washington tells the developing world how dangerous nuclear weapons are and declares its firm commitment to prevent the spread of nuclear weapons. This hypocritical policy, however, is not being pursued with any consistency. Washington's nonproliferation policy is very selective. It hardly discusses the nuclear weapons programs of Israel and South Africa—Washington's allies in two critical regions.

In relation to Pakistan's nuclear weapons program, the occasional concern expressed in Washington does not obscure the fact that the United States has turned a blind eye to the nuclear ambitions of Pakistan. This has been the U.S. approach to nuclear proliferation in South Asia. It was the United States, almost exactly a decade ago in May 1979, that drew the international attention to Pakistan's nuclear weapon capabilities by invoking the Symington Amendment to the U.S. Foreign Assistance Act. The amendment called for the suspension of the U.S. aid to those countries known to be pursuing a nuclear weapons program. Later, with the arrival of the Soviet troops in Afghanistan and the U.S. decision to revive the strategic consensus with Pakistan, Washington beat a hasty retreat. It decided to sacrifice its goal on nonproliferation in pursuit of a larger strategic objective vis-a-vis the Soviet Union.

Throughout the eighties, the evidence of Pakistan's drive to acquire nuclear weapons began to mount. Western sources pieced together the massive operation of Islamabad to acquire nuclear material and technology in West Europe and North America. The U.S. courts convicted individuals who had attempted to smuggle nuclear material into Pakistan. In spite of the irrefutable evidence, the United States had claimed that its military and economic assistance to Pakistan would reduce the pressure

on Pakistan to go nuclear. Not only this, it had also stated that the former Pakistan president, General Ziaul Haq, had assured the United States that Pakistan would not enrich uranium beyond 5 percent. The said assurance was significant in the view of the fact that uranium needs to be enriched beyond 90 percent for use in nuclear weapons.

Since 1985, the United States, in compliance with a new legislation, began to issue an annual certification that Pakistan does not possess a nuclear weapon. This posture could not be sustained as the Central Intelligence Agency—again a U.S. agency—leaked its assessment that Pakistan had enriched uranium beyond the 90 percent mark and it was only a screwdriver turn away from the bomb. If there are any doubts in people's mind, General Zia himself confirmed Pakistan's nuclear weapon capability in an interview to the TIME magazine in March 1987.

The election of Ms Benazir Bhutto as prime minister of Pakistan and the coming of a new administration in Washington have in no way altered the reality of Pakistan's nuclear weapons program or the depth of the strategic consensus between Washington and Islamabad. The Bush administration has only confirmed the American inability and unwillingness to check Pakistan's nuclear weapon program. By dropping the earlier demand that Pakistan should not enrich uranium beyond 5 percent, the American officials have welcomed Ms Bhutto's assurances on the peaceful nuclear intentions of Pakistan. But it is not entirely clear whether they accept these assurances. In any case, given the widespread consensus in Pakistan behind the nuclear program, it is unlikely that any government in Pakistan would really bend on the nuclear issue. While the U.S. would continue to monitor the Pakistan nuclear program, it is in no position to hold Pakistan into public assurances.

The current contortions in Washington are only a part of the effort to make the U.S. Congress learn to live with nuclear Pakistan. The U.S. fudging on Pakistan nuclear weapons is quite understandable. What is entirely not understandable is the U.S. effort to equate India and Pakistan on the nuclear issue—to impose a discriminatory nonproliferation regime on India and to constrain indigenous technology development in India.

**West's Stand on India's Technology Gains Viewed**

*BK2706115789 Delhi PATRIOT in English*

*24 May 89 p 4*

[Editorial: "After 'Agni'"]

[Text] The successful test-launch of Agni [India's surface-to-surface missile] as the Prime Minister put it, "provides us with a viable non-nuclear option of the greatest relevance to the contemporary strategic doctrines". Simply put, Agni fills a vital gap in the country's strategic requirements and demonstrates India

has come of age in indigenous technological development. In terms of technological implications, Agni is in the same genre as the 1974 Pokhran nuclear implosion was. Predictably, like the 1974 underground test, the Agni launch has invited a lot of flak from the West, chiefly the U.S. The American and Pakistani reactions have been sharp. Pakistan Foreign Minister Sahabzada Yaqub Khan has described Agni as a threat not only to regional stability but also to international peace. The U.S. for several weeks now has been at pains to somehow thwart the Agni launch. From expressions of "deep concern" to dark hints about damage to India's developing relations with China and Pakistan to outright threats to Indo-U.S. ties—the U.S. has tried every tactic to dissuade India from developing indigenous missile technology. No such "deep concern" was forthcoming from Washington when Pakistan, and earlier Israel, test-fired their missiles or when China sold its 'East Wind' and 'Silkworms' to Saudi Arabia. The patently anti-Indian colouring of U.S. concerns over missiles proliferation becomes apparent from the U.S. Congress' decision to consider stoppage of technology transfer and trade barriers against developing countries that have or are about to have ballistic missiles. The moves as a U.S. military analyst affirmed, are "clearly to make an example of India." These moves may be followed by a U.S. attempt to set up a cartel of the leading industrialised nations to enforce an embargo on supplies to India. After the Pokhran test, under the U.S.-British initiative the notorious London Club was set up to deny equipment which can be used in nuclear technology. The discriminatory NPT [Non-Proliferation Treaty] regime has been consistently opposed by India. That is why India is "a thorn in the side of the West". India's missile programme, aside from strengthening India's security, places India in a position to persuade others to negotiate a nuclear-disarmament treaty. Meanwhile, India must continue with its national endeavour for technological self-reliance.

**Implication of UK Labor Party Policy Change**  
*51500150 Madras THE HINDU in English*  
*23 May 89 p 8*

[Excerpt] This new position of the Labour Party has valuable lessons for India. In his detailed proposals to the third UN Special Assembly on Disarmament SSOD-III the Prime Minister, Mr Rajiv Gandhi, also refused to accept the unilateralism imposed on the rest of the world by the Non-Proliferation Treaty. The time has now come for India to declare that it also believes unilateralism is not realistic and therefore it is in favour of multilateral arms reduction and its own policies are to be shaped by this consideration.

People might point out that Mr Gorbachev has initiated a number of unilateral steps and they have had an impact on East-West relations and the global strategic climate. This is undeniable. However, Mr Gorbachev would not have been able to give up the intermediate range missiles and reduce the Soviet forces by half a million but for the fact that the much denigrated Brezhnev (I am no admirer

of his) built up an arsenal to a size comparable to the Western arsenals. The West realised the wisdom of arms control only when the Soviet arsenals started matching theirs and even exceeding them. The U.S. negotiator, Mr McCloy signed a list of principles for progress towards disarmament with the Soviet delegate, Mr Zorin, even as the Kennedy-McNamara combination went on to build a nuclear arsenal of a size and sophisticated unimagined up to that point in history. Even now so long as the West believes technologically it could build more advanced short range missiles than the Soviets it would not agree to negotiate on reduction or elimination of such weapons. When they get information that the Soviets too are likely to match them in technological sophistication in short range missiles (which they are bound to after a time) they would then agree to negotiate.

**India and Disarmament**

The multilateralism spelled out in Mr Rajiv Gandhi's SSOD-III proposals is not strong enough. India can play an effective role in multilateral nuclear disarmament at the global level only when the world come to believe that India is a nuclear weapon power and therefore it is not an ignorable factor in respect of disarmament negotiations. Agni is recognised as a signal by many Westerners and hence the attempt to put pressure on India to give up the test. The Indian policy needs a subtle fine tuning. The unilateralism that India's nuclear programme is entirely peaceful should be given up. It is not suggested that there should be a public declaration that we have become nuclear weaponwise. India's declaratory policy should become increasingly ambiguous. In future the answer to the question whether India intends to go nuclear or has gone nuclear should be that India's policy is adjusted to the international realities and takes into account multilateral interactions. In the Fifties when Homi Bhabha proposed a declaration by India abjuring nuclear weapons Nehru advised him against such unilateralism. [passage omitted]

**Gandhi Comments on Opposition to Agni**  
*BK2106031089 Delhi Domestic Service in English*  
*0240 GMT 21 Jun 89*

[Text] Dedicating the 2,408-crore-rupees National Aluminium Company at Angul to the nation, the prime minister reaffirmed his government's commitment to pursue the path of self-reliance to build a modern and vibrant India. Mr Gandhi regretted that the Janata Dal leaders for their narrow political gains wanted the country to compromise on the matters pertaining to security and self-reliance. They had joined hands with the foreign powers who had threatened and pressurized India not to go ahead with the launching of Agni [medium-range ballistic missile]. Mr Rajiv Gandhi asserted that India refused to succumb to such pressures and successfully launched the missile. Now that the entire nation is taking pride in it, the Janata Dal leaders have started welcoming it, he said.

**Janata Dal Leader Denies Party Against Missile Test**  
*BK2206065589 Delhi Domestic Service in English*  
*0435 GMT 22 Jun 89*

[Text] The Janata Dal president, Mr V.P. Singh [former finance minister in Prime Minister Rajiv Gandhi's cabinet], says his party was never opposed to the Agni missile test. Refuting the criticism of the ruling party in this regard, Mr Singh in a statement claimed that the Janata Dal was also not against the development of the Balipal [missile] test site in Orissa.

**Nuclear Power Regulatory Chief Holds Press Conference**  
*51500145 Bombay THE TIMES OF INDIA in English*  
*5 May 89 p 9*

[Text] Bombay, May 4. The choice of the site of the Narora atomic power reactor in Uttar Pradesh was a "political decision", the chairman of the Atomic Energy Regulatory Board, Prof A. K. De, said here today.

Addressing a news conference he said that the reactor was located near the Ganges and there were several industries around. "It could have been slightly shifted to a point a little away from the present location," he said.

This was the first news conference organised by the board since its inception in 1983. Others present at the meeting were Dr Praful Desai, director, Tata Memorial Hospital, Bombay, Mr J. C. Shah, a private consultant, Prof Sri Ram, Indian Institute of Technology, Kanpur, and Mr M. S. R. Sharma, chairman, safety review committee of operation plants.

Prof De, however, made it clear that the decision to locate the Narora reactor at its present site was made before the atomic energy regulatory board came into existence.

A document released at the conference stated that since the plant was located in Zone 3 and bordering on Zone 4 seismic area which means it was a moderate area, the AERB took the opinion of consultants regarding the appropriateness of the seismic parameters chosen for the design of the reactor.

The design parameters were originally arrived at after a detailed study was carried out by the School of Research and Training in Earthquake Engineering, University of Rourkee. There are some areas where this report has to be further substantiated. The University of Rourkee, thereafter, prepared a fresh study with the help of satellite imagery.

"This report indicated the adequacy of the seismic design parameters of the Narora atomic reactor," the document stated. Another area of concern where the

advice of a specialist was sought by the AERB related to the possibility and extent of settlement of a reactor building in case of seismic activity.

"This aspect has been fully resolved after detailed information was provided and the adequacy of design was proved," the document stated.

The main aim of today's news conference was to emphasise and highlight the effective functioning of the Atomic Energy regulatory Board. In this context, Prof De said that there was delay in the commissioning of the Narora reactor because the board did not give its clearance for some time as it did not want safety standards to be compromised.

Mr Sharma said that the board asked for the shut down of the Rajasthan Atomic Power Plant-I in July 1987 in August, 1986, the Madras Atomic Power Station was directed to be shut down, in May 1988 the Tarapur Atomic Power Station was asked not to proceed with the "start-up" and in November 1987 the Dhruva reactor was asked to operate at 80 megawatts and not to go to 100 megawatts.

The point Mr Sharma is making through these examples is that the AERB imposed these restrictions because at all these plants certain requirements were not adhered to. But, now the lacunae have been set right and they have resumed normal working, he said.

Tests in reactor engineering division laboratories in Bombay and Bangalore are currently under way to verify the feasibility of running the Madras Atomic Power Projects (MAPS) unit 1 and 2 now shut down, with some make-shift repairs.

The AERB was awaiting data on temperatures, flow pattern and other calculations from the Nuclear Power Corporation in regard to undertaking makeshift contingency operations and the final decision for reducing the power shortage in Tamil Nadu may emerge in two weeks.

Mr Shah said that there was tremendous pressure on operators to keep the plants functioning. "The plans have to keep operating, but it has to be done in a safe way," he said.

Dr Desai said that in certain areas people were exposed to more radiation than in other regions of the world. In India those staying near Trivandrum are subjected to a greater degree of radiation exposure.

Yet, the cancer registry did not show a substantial increase in the incidence of cancer. Similarly, even in the area around the Tarapur Atomic Power Station there is no alarming increase in cancer cases, he said.

He said that a study was being carried out in the area around nuclear power stations to see if there was any increase in the incidence of cancer cases.

Referring to the X-ray equipment in the country, an AERB document states: "Many installations are inadequately planned. The training of professionals is not of a uniform standard. Accessories of radiological protection are virtually not available in some institutions."

There are a few thousand units in various regions of the country and over a 1,000 new units were commissioned annually all over India. At today's conference atomic energy officials said that on account of the surveillance carried out by the AERB the situation has definitely improved.

#### Audit Panel Criticizes Energy Department 'Poor Performance'

51500143 Bombay *THE HINDU* in English  
19 May 89 p 10

[Text] New Delhi, May 18. The Public Accounts Committee (PAC) in its 162nd report to Parliament has expressed concern over the poor performance of the Department of Atomic Energy (DAE) and has called upon the Government to give the necessary thrust to the current nuclear profile which aims at attaining 10,000 MWe of power by AD 2000 "keeping in view the experience gained in constructing nuclear power stations and also by making realistic assessment of indigenous industrial capabilities."

The PAC which has examined the Madras Atomic Power Project (MAPP) in detail, says the DAE could not prepare a "realistic project estimate" for MAPP. There were as many as seven revisions with regard to the projected date of criticality. The Committee observes that since many of the revisions took place because of the non-delivery of various items of equipment from indigenous manufacturers, it gained the 'impression' that the DAE could not adequately assess the Indian industrial situation and depended on the manufacturers claims on the time and cost estimates.

Detailing the delays, the PAC notes that according to DAE estimates, the delays for MAPP I were attributed proportionately in the following fashion: Civil works 10 per cent; end shields 30 per cent; coolant tubes nine per cent; stand-by coolers eight per cent; increase in duration of post-feeder work, 5 per cent, instrumentation and control works and changes in design due to RAPS experience, 18 percent; and delayed supply of heavy water 20 per cent. The delays on MAPP II were attributable to end shields 55 per cent, coolant channel assemblies 29 per cent and heavy water, and instrumentation and design improvements 16 per cent.

The PAC's observes that when the MAPP project was taken up, the schedules were set according to the work of the RAPP project. However no consideration was given to the type of specific problems that emerged. This included the sub-soil conditions which were determined only when the excavation was done.

The Committee expressed its concern over the delays in the delivery of equipment for the project. It does "wonder" as to how the DAE embarked upon building the nuclear power stations "without meticulously assessing the capabilities of the industrial infrastructure available in the country in the late Sixties and early Seventies."

The sharpest observations relate to the delay in the supply of heavy water since the commissioning of MAPP I was delayed by 16 months because of this, involving a revenue loss of Rs 56.42 crores. For this the PAC blames the DAE for its poor planning and assessment.

Pricing policy: The PAC has also looked into the question of nuclear power pricing policy. The cost reductions were made more than a view to reducing the tariff rate for supplying power to the State Electricity Boards rather than from "acceptable commercial norms of accounting." In this case, the report says, the cost of major repairs—which is the case of MAPP was Rs 750 lakhs—ought have been included in the generation costs. Similarly, the cost of waste fuel storage should have been computed for fixing the tariff.

The Committee desires that the Government examine the feasibility of introducing Technical Audit in the scientific departments to evaluate their performance in all respects.

Reviewing the performance of MAPP, the PAC observes that while problems could be expected in the first two years, the fall in the performance of Unit I in 1986-87 and of Unit II in 1987-88 was quite pronounced. The high pressure state turbine blade failures in both units and the low pressure stage blade failure in the Unit II were the main cause for the low generation in 1987-88.

The Committee broadly accepts the DAE's contention that the failures were a result of poor quality products supplied by BHEL. It has requested the Government to keep the PAC informed of any review on this score.

Further, the PAC has asked the Government to examine the prospect of claiming compensation from the manufacturers of critical nuclear components, "be they from the public sector," for the defective components to ensure that the poor consumer is not made to pay.

#### Audit Panel Releases Report on Tuticorin, Dhruva

51500147 Calcutta *THE TELEGRAPH* in English  
4 May 89 p 6

[Excerpt] New Delhi, May 3. The Public Accounts Committee (PAC) has warned that the department of Atomic energy's target of achieving a capacity of 10,000 MW of nuclear power by AD 2000 could be thrown out of gear completely if its projects continue to suffer time and cost overruns.

The PAC, in its detailed study of the Tunicorin heavy water plant and the Dhruva research has said that these projects have been delayed mainly because of slow progress in civil and structural works. The report has observed that these works have been taken very casually by the department, resulting in enormous cost overruns. The PAC has recommended setting up a steering committee for advance planning and co-ordination among different authorities.

The PAC report on the Tunicorin heavy water plant has said that the plant which was scheduled to be commissioned in January 1975 was only completed in 1978. Civil and structural works alone were delayed by more than 32 months. (Another five months were taken up for erection of equipment and another five and half months later the plant was finally commissioned.)

The project made a troubled beginning. Acquisition of land, soil tests and the fabrication of structures and their transport took a lot of time. The suppliers also could not stick to near time schedules. The department of atomic energy had to cancel orders with Bharat Heavy Plates and Vessels as the later could not keep their word because of management problems.

The department had to meet requirements through imports. Several other items which were originally planned to be manufactured indigenously had to be imported, causing time overruns. The non-availability of matching steel added to the delay. The report has observed the need for directives to ensure that projects of such importance are not held up because of non-allocation of steel and other scarce materials.

The project incurred enormous cost overruns. The initial estimated cost of the project was Rs 2,132 lakhs in 1971. In June 1979 the cost estimate was revised to Rs 3,741 lakhs, a whopping 130 per cent hike over the initial cost estimate. The foreign exchange component hike was another embarrassment for the department. The foreign exchange component rose to Rs 19 crores from the Rs 7 crores estimated initially.

Similarly, the Dhruva project also suffered time overruns. The reactor, which was scheduled to be commissioned by the end of 1976 went critical only in 1981. The design and civil work delays resulted in inadequate site and geological investigations.

The Dhruva plant has incurred an additional expenditure of Rs 27 crores over the total sanctioned project cost of Rs 76 crores. The project did not have proper financial sanctions for several years. A revised sanction of Rs 107 crores was given in the year 1988.

#### **Cyclotron Center Director Cites 'Neutron Bursts' in Experiment**

51500144 Bombay *THE TIMES OF INDIA* in English  
14 May 89 p 9

[Text] Calcutta, May 13. Dr Bikash Sinha, director of the Variable Energy Cyclotron Centre has claimed that scientists at the Centre have detected neutron bursts three times the normal neutron presence in the atmosphere.

They conducted an experiment similar to the so-called "cold fusion" experiment carried out by Mr Stanley Pons and Mr Martin Fleischmann in the U.S. The temperature had risen from 25 degree C to 53 degree C during the ten-minute neutron burst, he told newsmen here yesterday.

However, he refrained from describing the experiment as "cold fusion." He said they were trying to find out the origin of the excess neutrons. It might have come from the cosmic rays present in the atmosphere or might have resulted from the experiment itself. Only if the latter proved to be true, then could the experiment be described as "cold fusion" which would, no doubt, bring revolutionary changes in the science of energy and astro-physics. They proposed to carry on the experiment under more controlled conditions to satisfy themselves.

The director of the VECC, which is under the Bhabha Atomic Research Centre, said what was most interesting was that wherever the experiment had been carried out, an identical three times burst of neutrons had been noticed. "This coincidence is too good to be thrown away," he said.

The neutron bursts occurred after seven hours of the simple electrolysis experiment and a second burst of three times neutron emission occurred with a similar rise in temperature after a gap of three hours.

Dr Sinha said they had used a palladium cell as cathode and a platinum coil as anode. An electric charge of four million amperes per sq cm was passed through the platinum coil immersed in heavy water. The neutron bursts were observed in a neutron-counter used with the experiment. In another experiment, titanium was used as cathode and neutron bursts were observed three times after 14 hours of electrolysis. The temperature in this case rose up to 40 degrees.

Dr Sinha hoped that such experiments would help them resolve the mystery of the hot springs at Bakreswar in West Bengal and at Tantalo in Santhal Parganas in Bihar where helium, heavy water and argon gas had been detected. The VECC scientists had already made excavations at Tantalo to relate their laboratory experiment with the natural phenomenon. Prof Shyamadas Banerjee of Calcutta university had carried on experiments for three decades to resolve the mystery of these hot springs.

He said the scientists were motivated to carry on the laboratory experiment, following the news of the experiments by Mr Pons and Mr Fleischmann.

#### **Scientists Tell Cause of Kalpakkam Reactor Accident**

51500142 Bombay *THE TIMES OF INDIA* in English  
19 May 89 p 6

[Text] Madras, May 18 (UNI). The fuel handling mishap at the fast breeder test reactor at Kalpakkam in May 1987, which led to a two-year shutdown of the reactor, was caused by human error, top atomic energy scientists say.

The mishap occurred when a fuel sub-assembly was being lowered. It got entangled with the control rod. The control rod and the fuel sub-assembly were bent.

Some interlocking devices of the fuel handling machine were faulty at the time of the mishap but the safety committee had allowed fuel handling with emphasis on the human element.

The reactor was made critical again on May 11 after cutting and removing the bent control rods and damaged fuel sub-assemblies.

The reactor, which was shut down subsequently to load the 23rd fuel sub-assembly, was expected to be made critical again tomorrow, scientists said.

Mr C. V. Sundaram, director of the Indira Gandhi Centre for Atomic Research, said a series of measures had been taken now to prevent the occurrence of a similar mishap.

The possibility of human error had also been drastically reduced with a series of measures.

Mr S. R. Paranjpe, director of the reactor group, explained that improved safety logic, increased instrumentation and additional administrative control had been taken now so that the mishaps did not recur.

The number of indicators have been increased so that the degree of redundancy in the information available to the operations could be increased. This would enable operators to identify incorrect indications that may come to them by the failure of some equipment. In effect, the safety margin against equipment failure has been increased, Mr Paranjpe said.

The number of interlocks have been increased and the safety logic have been modified to permit "negative sequence checking."

A new administrative procedure stipulating that before every fuel handling campaign a certain procedure should be followed has been introduced. This also would take care of mischief.

In the newly-introduced administrative controls, two engineers have to independently check and write down observed readings and compare them with the expected reading. They have to stop further proceedings if a discrepancy was noticed.

Mr Sundaram said the mishap had not in any way affected the country's nuclear research programme.

"I would say that the mishap has given us new knowledge to face new situations. No new technology is free from mishaps," he said.

Advanced technology was used for repair and restoration. Various inspection techniques devices were used to assess the extent of bend of the guide tube to find out whether it could be removed.

**Sharp Rise in Heavy Water Production Predicted for 1990**

51500146 New Delhi *PATRIOT* in English  
4 May 89 p 9

[Text] Heavy water production will go up considerably next year with the commissioning of two more plants and the rise in production of several existing plants, reports UNI.

The Hazira and Manguru heavy water plants are schedule for commissioning next year.

The hydrogen sulphide generation unit of the Manguru project is ready for commencing production after necessary safety clearances. The main heavy water plant including the exchange units and the vacuum distillation unit has been installed.

The Hazira project is based on the mono-thermal ammonia-hydrogen exchange process. Pre-fabrication of piping and erection of equipment have been started.

The performance of all the heavy water plants has shown satisfactory results during 1988-89 according to the annual report of the Department of Atomic Energy. This has been done by achieving good stream factor and by resolving some of the constraints in the plants.

More production in all the plants could have been achieved but for some external constraints, the report said. These were power constraint to the fertiliser plant for Nangal heavy water plant, lower pressure and lower deuterium concentration in the feed synthesis gas from fertiliser plants as in the case of Thal heavy water plant, non-availability of feed synthesis gas and other utilities for long period as in the case of Talcher plant and interruptions in supply of steam for the Kota heavy water plant.

**Lapses in Operation of Heavy Water Unit Scored**  
51500148 Bombay *THE TIMES OF INDIA* in English  
2 May 89 p 6

[Text] New Delhi, May 1. The comptroller and auditor-general of India (CAG), in its report submitted to the government of India, has found a series of irregularities in the commissioning and running of the Baroda heavy water plant of the department of atomic energy.

There was a 53-month delay in commissioning of the plant, large cost overruns, an increase in the cost of production and high running costs.

The foreign collaborator, too, who ought to have given performance guarantees, was absolved of all contractual obligations although the plant faced equipment failure, delays in equipment supply, a major fire and an explosion. In addition, no performance accounts have been prepared for the last eight years.

The Baroda plant was set up in technical collaboration with M/s Gelpra of France and an agreement was entered with them in 1969 to commission the plant in 1973. The plant, however, was commissioned only in June 1977, closed due to a fire and was restarted in January 1980.

It was to produce heavy water at an estimated cost of Rs 478 per kg later, this was revised to Rs 1,023 per kg and CAG found that in 1986-87, the cost of production was in excess of Rs 6,886 per kg. Such was the planning and management of the DAE that the cost of production per unit increased by over 1,400 per cent over its initial estimate.

The CAG found that of the 53 months delay in commissioning, 22 months were accounted for by delays in supply of equipment and two months by the sequential delay in erection. Another five months were lost due to equipment failures and 24 months were lost in commissioning.

The initial financial sanction of Rs 1,508.7 lakhs in 1973 went up because of slippages to Rs 3,387.15 lakhs by June 1980. The CAG found that in five out of the ten heads of expenditure, the cost-run was over 50 per cent.

The story of how the foreign collaboration was handled is no less interesting. Nineteen amendments were issued to the technical collaboration agreement and in the process, the financial liability of the DAE increased by French francs 38.41 lakhs, while the warranty period of the equipment supplied by the French firm was reduced. The DAE provided no reasons for either increasing the cost of supervision, to be paid to the French firm by more than 200 per cent or reducing the initial guaranteed production from 95 per cent to 93 per cent, or even for reducing the mechanical warranty period in the contract with Gelpra when it was provided to last for a longer period of time.

The DAE failed to explain why Gelpra was absolved of equipment warranty even though various equipment failures were noticed during mechanical testing and even afterwards. The DAE told the CAG that the continued stay of Gelpra experts would have been at its cost. However, the CAG notes in its report that the need for the French experts arose out of the failure of Gelpra to supply the equipment on time and also because of equipment failure. "Being so, Gelpra experts should have been asked to stay at their own cost to prove the plant," it notes.

The CAG has noted that the cost of production of heavy water at Baroda is high not only because of the more than doubling of the project investment cost, but also because the average production at the plant is less than 30 per cent of capacity.

Besides these, the CAG has also taken note of some other failures of the plant management. These relate to the delay in payment of fixed charges and payment of dues for ammonia brought from the Gujarat state fertiliser company extra expenditure on natural gas, extra expenditure on insurance and overpayment to transport contractors.

## IRAN

### Atomic Energy Delegation Arrives in Tehran NC2106061889 Tehran Domestic Service in Persian 0330 GMT 21 Jun 89

[Text] The head of the International Atomic Energy Agency [IAEA] arrived in Tehran this morning at the head of a high-ranking delegation consisting of officials of this agency and was welcomed by officials of the Iranian Atomic Energy Organization [IAEO] and the ambassadors of Argentina and Sweden.

The Central News Unit reports that after his arrival in Tehran, Mr Hans Blix spoke to our correspondent and expressed his pleasure in visiting Iran. He also expressed hope that he will be able to take effective steps toward the objectives of the two organizations. He said that cooperation between the IAEA and the IAEO in past years has led to the implementation of various projects. He added that one of the major objectives of the IAEA is to extend scientific-technical assistance to member countries as far as possible. In conclusion, he expressed hope that during his meetings with the officials of the Islamic Republic of Iran, favorable grounds for joint cooperation will be created.

### Musavi Receives IAEA Chief Blix 25 Jun LD2506151989 Tehran IRNA in English 1343 GMT 25 Jun 89

[Text] Tehran, June 25, IRNA—Director-General of the International Atomic Energy Agency (IAEA) Hans Blix in a meeting with Prime Minister Hosseyn Musavi Sunday announced IAEA's readiness to cooperate with Iran in setting up nuclear reactors in Iran for peaceful purposes.

The prime minister welcomed the idea and declared Iran's interest in acquiring latest information in nuclear science for peaceful use.

Referring to the threat posed by nuclear arms race to the environment, Premier Musavi said the major threat came from the West.

"The Islamic Republic of Iran, as a signatory to the nonproliferation pact, welcomes international efforts to check the use of nuclear weapons and protect the environment," Musavi said.

Criticizing the Bonn government for its reluctance to complete a nuclear reactor in Bushehr, southern Iran, Musavi reiterated that Iran was serious in setting up such reactors.

"Iran has, since sometime ago, sought help from other sources for setting up of nuclear reactors and has thus far received positive and promising responses," Musavi said, without elaborating.

Compared with the West, Iran has the least share in polluting the environment because of its use of diversified sources for energy, Musavi concluded.

The IAEA chief arrived here on June 21.

**IAEA Chief Inspects Bushehr Power Plant**  
LD2206171689 Tehran IRNA in English  
1645 GMT 22 Jun 89

[Text] Bushehr, June 22, IRNA—Secretary-General of the International Atomic Energy Agency (IAEA) Hans Blix today inspected Bushehr nuclear plant, which contrary to all international regulations was the target of repeated air raids by Iraq during its 8-year aggression.

Upon arrival in this southern port-city, Blix said that IAEA was ready to cooperate with Iran to estimate damage inflicted on the plant from the economic and technical points of view.

In open violation of the IAEA charter against raids on atomic installations, the Bushehr nuclear plant was raided by the Iraqis a total of six times: on March 24, 1984, February 12, 1985, March 5, 1985, July 12, 1986, and twice in November, 1987.

Iran's complaints to the IAEA after every attack drew mute response, but today after witnessing the plant, Blix reiterated the need for security of nuclear installations.

Nuclear installations are highly sensitive, and any radiation leak could prove dangerous to the human environment and ecology.

Elsewhere, Blix said that since other fuels including oil, lead to pollution, an intensive need for electricity generated through atomic energy is felt in most world countries.

In case of progress in nuclear disarmament talks between the two superpowers, and if peace finally gets a chance around the globe, the danger of expansion of nuclear weapons will reduce, and IAEA would have a chance to follow up and control the issue, Blix hoped.

## IRAQ

**Reports of Nuclear, Chemical Warheads Denied**  
JN0307092089 Baghdad INA in Arabic  
0745 GMT 3 Jul 89

[Text] Baghdad, 3 Jul (INA)—Culture and Information Minister Latif Nusayyif Jasim has strongly refuted allegations and falsehoods propagated against Iraq by Western and American media organs—the latest of which was the NBC television station—about Iraq's alleged intention to produce nuclear and chemical warheads for its missiles. In a statement to INA, the Iraqi minister affirmed that Iraq neither has the potential nor the intention to produce nuclear warheads for its missiles. Neither, he added, does Iraq have any intention to produce chemical warheads for its missiles.

Jasim warned that this cunning campaign aims at covering up an aggressive act through which Israel will continue its intransigence and embark on a serious adventure against Iraq. He added that Iraq is aware of the cunning purpose of what is being published in the American media.

The culture and information minister stressed that Iraq needs only conventional weapons to defend itself and its sovereignty. He reiterated that Iraq realizes the cunning purposes of the reports being published in the American media organs, which propagate them in the occupied territory on a large scale, and realizes those who stand behind them.

Jasim recalled the previous warnings made by Iraqi officials in response to these attempts. He said: All parties that are preparing aggressive schemes against Iraq must study these warnings carefully.

## PAKISTAN

**Breakthrough Claimed in Uranium Enrichment**  
51004708a Lahore THE NATION in English  
16 May 89 pp 1, 4

[Article by Abdul Jabbar Khan and Yousuf Khan]

[Text] Karachi—Pakistan is understood to have reached such an advanced technological stage in nuclear field that the question of explosion is no problem for it. "Pakistan can go anytime for nuclear explosion, but it will not do so because the prime objective of the government of Pakistan is to develop means of using nuclear energy peacefully," competent scientists and nuclear physicists disclosed.

The technological innovation of nuclear fission, enrichment of uranium 235 and any use of plutonium 239 is at very advanced stage and the formula used by Pakistan is quite different from that of other nuclear countries.

The modern countries, including India, who have already exploded nuclear devices base their nuclear research and enrichment on gaseous system. Pakistan, on the other hand, has achieved a tremendous breakthrough in this field by developing a new method of uranium enrichment based on "liquid" system.

The fission experimentation continued for over three years. However, the country now possesses all the facilities in the field of nuclear development and research. Pakistan can produce about five to six nuclear bombs with around 70 to 80 kgs of enriched uranium.

The sources further disclosed that the cost of enriching such amount of 235 is even less than 20 million Pak rupees. Other cost of design and instrument is a concern of metallurgists. They said Pakistan can go for any "nuclear device" anytime, but they asserted, "there is no need for that," our experimentations have been quite successful, they further stated.

The story of the nuclear technological field and Pakistan's research in this field goes back to Ayub Khan's regime, when the research started. One of the scientists who is the innovator of world's unique and the cheapest source of enrichment was once engaged in giving an ideal plan of "zero point" round about of Islamabad which was constructed with some modifications.

They further said that although the work of the world-fame scientist, Dr Abdul Qadeer was highly commendable, his work was concerned more with the execution of the formula—developed by another scientist—and storage of enriched uranium. But the authorities are yet to disclose the real inventor of the formula.

The sources said that Pakistani nuclear scientist, who is behind this breakthrough, has also applied for a patent in the United States Department of Commerce.

The sources disclosed that while the Kahuta enrichment plant was handling U235—a basic material for nuclear energy—the Karachi nuclear power plant which was based on natural uranium and heavy water—was the main producer of Plutonium 239. Both these "raw materials" are available in adequate quantities in Pakistan and if Pakistan does develop or get some nuclear reactors for the development and generation of nuclear power the crisis of power in the country can be resolved very cheaply. The major cost, "they said, is to be incurred on the designing and manufacturing of a nuclear plant and as such Pakistan is trying hard to acquire nuclear reactor for power generation." "Pakistan," they said, "badly needs a re-processing plant which will supplement the by-products of KANUPP and help produce more power besides getting fuel for other needs." They said that advanced countries spent billions of dollars on developing conventional methods for enriching uranium while Pakistan was far ahead of any other country in this field. "The weapon-grade enrichment is a gift of the Almighty," they observed.

The new uranium enrichment formula is a state secret which was handed over to the late President General Ziaul Haq the day Dr Abdul Qadeer was appointed as head of the Kahuta Nuclear Research Centre. They said the enrichment plant at Kahuta was not based on research in the Dutch laboratory, in which Dr Qadeer used to work.

The sources have said that Pakistani scientists have been very successful in the "control of atom" which is a hundred million dollar question for a country like Pakistan which faces great hardships from all over the world. One hardship includes the ban on supply of natural uranium and heavy water from Canada, the supplier of Karachi nuclear power plant. They said Pakistan is not required to go for any explosion of average magnitude as the successful experiments proves positively and there is no such need for doing so, they concluded.

#### Scientist Denies Intention To Build Bomb

*BK2306161889 Hong Kong AFP in English  
1603 GMT 23 Jun 89*

[Text] Islamabad, June 23 (AFP)—Pakistan has no desire to develop or acquire nuclear weapons, Munir Ahmed Khan, chairman of the Pakistan Atomic Energy Commission, said Friday.

Mr Khan said that the main objective of Pakistan's "peaceful" nuclear programme was to utilise nuclear technology for scientific, industrial and economic development, the ASSOCIATED PRESS OF PAKISTAN reported.

"We strictly believe in elimination of all existing nuclear weapons on the world forum to minimize a nuclear threat to world peace," he said.

Mr Khan, speaking at the concluding session of a physics seminar, said that "Pakistan has no intention to develop or acquire nuclear weapons as the prime minister, Benazir Bhutto, recently declared in Washington."

Ms Bhutto, during her visit to the United States this month, assured U.S. President George Bush that her country's nuclear programme was not aimed at producing an atomic bomb.

The assurance followed reports in the West that Pakistan was on the verge of detonating a bomb after indigenously developing the capability.

#### PAEC Chairman Views Civilian Uses of Nuclear Energy

*51004708b Lahore THE NATION in English  
16 May 89 pp 1, 4*

[Text] Islamabad—Mr Munir Ahmad Khan, Chairman, Pakistan Atomic Energy Commission (PAEC) said here on Monday that the advantages offered by nuclear techniques in medicine both in diagnosis and treatment should be made available to the common man.

Inaugurating a seminar on modern trends in nuclear medicine sponsored by PAEC and KFK, a nuclear research institute of Federal Republic of Germany at NORI, he said this was one way of bringing high technology for the benefit of the masses.

In this connection, he said Pakistan has established nine nuclear medical centres where 160,000 people were treated every year.

He said Pakistan was one of the leading countries in the Third World in promoting nuclear medicine. Pakistan has built medical centres in parts of the country which had been designed and constructed by our specialists and latest available equipment and facilities were used in it.

Mr Munir Ahmad Khan said training courses had been organised in Islamabad to train manpower in health physics and enough medical physicists were available in the country to man all the facilities of the commission.

Mr Munir Ahmad Khan said Pakistan believed in peaceful uses of atomic energy. The entire nuclear programme was designed to bring the benefits of peaceful atom to the people of Pakistan in such areas as power generation, applications in agriculture, public health and industry, he said.

Pakistan has also made special efforts to promote the application of atomic energy in agriculture. In this field strong economic impact had been made by introducing new varieties of crops with higher yield and better resistance to diseases. This had made visible impact in our rural areas and brought about a revolution in cotton production.

The PAEC Chairman said Pakistan had been cooperating with the Federal Republic of Germany in the peaceful uses of atomic energy for several years in such fields as basic research, safety, agriculture and medicine.

He said Pakistan was willing to cooperate with Third World countries in establishing nuclear medical centres and sharing our experience with them.

Earlier in his welcome address Dr Ashfaq Ahmad, senior member, PAEC, said there was no branch of medicine in which the importance of nuclear medicine techniques in one way or has not been felt.

Speaking on the occasion, Dr N. A. Kizilbash, Director, NORI said nuclear medicine was one of those fields which had advanced tremendously in the world over.

Dr Kizilbash said that nuclear physicians needed continuous reorientation to keep abreast with the mercurial changes taking place in the modern world.

He hoped that this seminar would provide an opportunity to learn and practice the techniques which our colleagues from West Germany would reveal to us in the next couple of days.

Prof Feinendegen, an expert from KFK, said that KFK would continue to cooperate with PAEC in the field of nuclear medicine and to exchange ideas.—APP

#### Editorial Criticizes Webster's Stance on Nuclear Program

51004708d Islamabad *THE MUSLIM* in English  
22 May 89 p 4

[Editorial: "Misplaced Emphasis"]

[Text] According to William Webster, the Director of the U.S. Central Intelligence Agency (CIA), Pakistan is engaged in developing nuclear capability. What remains to be determined, in his view, is whether that capability has reached a point that it falls within the scope of various laws against aiding states attempting to acquire nuclear capability.

This is, of course, a familiar tune. And pressure on this front was only to be expected as Pakistan's role in the context of Afghanistan—congruent, in some of its critical aspects, to the felt imperatives of U.S. policy—begins to diminish. Predictably, Senator John Glenn, Chairman of the Senate governmental affairs committee, before which Mr Webster appeared, has on the basis of the new "evidence" argued in favour of a cutoff in U.S. aid to Pakistan.

In the CIA chief's statement, India too gets a "dishonorable mention" by reference to nuclear proliferation, but of a qualitatively different nature. While Pakistan is said to be "engaged" in the task of developing nuclear capability, India has only "begun research" that "could" be used to make thermonuclear weapons. The upshot is clear: Pakistan emerges as the major offender requiring immediate attention. Lest there be any confusion on this score, the statement has been finely timed to precede by only a few days, the first official visit by Pakistan's Prime Minister Benazir Bhutto to the United States. Among other things, this indicates that earlier signals from the United States to the effect that it may be willing to support Pakistan's proposal for a regional approach to the nuclear issue were not seriously intended.

The missile and atomic research programmes of India and Pakistan, Mr Webster has said, have "all the earmarks of a race." Strangely enough, however, there is no report on what if anything the committee may have had to say about ways and means of discouraging India from pursuing its nuclear ambitions. U.S. policy it seems is directed at stopping the race by disqualifying one of the contestants rather than persuading both to question the wisdom of the enterprise.

By design or sheer coincidence, a report that has appeared here simultaneously with the CIA chief's statement, speaks of the analysis of a Pentagon working group which makes the following points:

(a) India may attack Pakistan in order to interdict a Pakistani nuclear programme or "for some other reason"; (b) the United States would not be able, in that case, to do much for Pakistan; (c) India has the means and the will to project its force as it has already demonstrated in the case of Sri Lanka. Taken together, these suggest at least two things: An Indian attack on Pakistan is likely—for one reason or another; second, if India does so, the United States is in no position to help Pakistan. Should then Pakistan eschew its nuclear option when it is being provided with such a grim picture of its security environment?

This is, of course, not to suggest that either the "facts" that have been revealed or the conclusions that these have led to, are necessarily valid. But it is to point out the contradictory nature of the signals emanating from the United States. Surely if a nuclear arms race is to be avoided, the stronger—and therefore the more secure—of the parties should be dissuaded first.

As far as Pakistan is concerned, its commitment to non-proliferation is a matter of record. It has repeatedly offered to accede to the Non-Proliferation Treaty simultaneously with India and on mutual inspection of nuclear installations in each other's country. Pakistan has also indicated its readiness to make a joint declaration with India on the renouncing of nuclear weapons as well as to conclude with India a bilateral nuclear test agreement. None of these proposals have been taken up by India.

The argument that India's nuclear option is relevant in the context of China is certainly no better than the one which posits for Pakistan the necessity of a nuclear deterrent against India. If the United States is really interested in non-proliferation in the subcontinent, it must adopt a regional approach to the issue. Meanwhile, it could perhaps work for some kind of an understanding between India and China that would alleviate the former's concern—if indeed that is central to India's nuclear programme.

#### **Commentary Calls for Removal of Secrecy Over Nuclear Power**

51004708c Islamabad *THE MUSLIM* in English  
26 May 89 p 4

[Article by Farhatullah Babar]

[Text] Last week KANUPP, the country's sole nuclear power plant was the focus of media attention as the news of a heavy water leak from the plant on 18 April was prominently published. Some newspapers also ran commentaries which tended to generate fears that the Karachi nuclear power plant posed serious hazards to the life

and safety of its citizens. A newspaper report even likened it to a potential atom bomb. Senator Professor Khurshid Ahmad hurriedly called a press conference and demanded the government to dismiss the Minister for Science and Technology and Chairman of the Pakistan Atomic Energy Commission who he blamed for the incident. He also compared the KANUPP heavy water leak with the nuclear accident at Chernobyl power plant in USSR about three years ago. Quick to see a hidden hand, Professor Khurshid also hinted at the possibility of sabotage behind the incident.

#### **Dark Shadows**

The incident itself and the reaction to it by the media and responsible politicians should not be taken lightly. This is because it has the potential of casting dark shadows on the viability of nuclear power in Pakistan. It can give a renewed opportunity to the opponents of Pakistan's nuclear programme by setting into motion a debate that nuclear technology is unsafe in the hands of developing countries like Pakistan. This indeed has been one of the themes used by our opponents against Pakistan's nuclear programme. That this opportunity has become available to come in the way of our opponents barely a few days before the Prime Minister's visit to the United States makes it all the more significant. It is, therefore, necessary to look at what actually happened at KANUPP, examine its implications and suggest some corrective and pre-emptive measures.

The first question to be asked is whether it was really a nuclear accident capable of endangering human lives? This question is central because KANUPP is located very close to Pakistan's most populous city Karachi, and any nuclear accident in the accepted sense of the term would be disastrous not only for the citizens but also have serious repercussions on the future of nuclear energy in Pakistan.

#### **Breakdown**

It should be clearly understood that the incident of heavy water leakage at the plant is quite distinct from a nuclear accident. A nuclear accident involves nuclear fuel which is contained in the reactor core and which causes and sustains nuclear reaction. It is highly radioactive and in case of an accident can cause considerable damage.

Heavy water, on the other hand, is merely a moderator which is used to slow down the otherwise fast moving neutrons. This slowing down of neutrons is necessary to cause a nuclear reaction inside the reactor and produce heat. The two materials, i.e. the heavy water and the radioactive uranium fuel are located in entirely different compartments of a power plant and each performs entirely different functions. In the case of 18 April incident the radioactive nuclear fuel was intact and because of the built-in mechanism it could not be affected by the heavy water leak.

Seen in this context the incident may perhaps be described as a serious case of breakdown but in no way can it be described as a nuclear accident. One may compare it to a car which breaks down on the road but is not involved in any traffic accident. And since KANUPP was already shut down prior to the incident one may compare it to a car parked in a garage from which mobile oil has leaked through a defective gasket.

It was also the subject of speculation as to what would have happened if the plant had been operating. It may even be argued that an ordinary breakdown of a moving car on the highway can cause accidents. Since the loss of heavy water (moderator) means the loss of material which regulates nuclear reaction, does it mean that there was a possibility of uncontrollable nuclear reaction and massive release of lethal radioactivity?

It is pertinent to point out that if there is no moderator the neutrons would move too fast to trigger any nuclear reaction. Thus the loss of heavy water actually means the halting of nuclear reaction in the reactor. In other words the heavy water, apart from being a moderator, is also like a closing mechanism for the reactor; drain out the heavy water and the plant is shut down. Indeed it is this feature of the KANUPP type reactor which distinguishes it from Chernobyl the type reactors which are based on different design criteria. That is why the Soviets have reportedly abandoned further use of Chernobyl type reactors and have opted for heavy water-moderated and other types of safer reactors.

#### Complacence

This analysis, however, does not mean that what happened at KANUPP was just ordinary or insignificant. In terms of net financial loss due to the loss of heavy water and the loss of power till the plant is brought back on line, the damage is substantial. The fact that it was not a nuclear accident which could have endangered human lives is not enough to overlook the damage done.

It is indeed strange that the leak of heavy water from a defective valve could not be detected till as much as 30 tons of it had actually spilled. That it has been collected and over 85 percent of it will be purified and reused is reassuring but it cannot mitigate the responsibility for maintenance and supervision. How and why it happened, only a properly constituted enquiry can tell. Perhaps the technicians, operators and supervisors all felt complacent as the plant was already closed. Perhaps due to this they were not as vigilant and alert in carrying out routine maintenance checks which they perform when the plant is operating.

#### N-Glasnost

The incident nonetheless serves to highlight at least two points. First, the relative ignorance of the media, and even responsible politicians about matters nuclear and

hence the potential of such incidents creating unnecessary panic and alarm. This was clear from the newspapers projection of the incident and also Professor Khurshid's observations made in a hastily called press conference without doing basic home work. Second, it has given yet another opportunity to the opponents of Pakistan's nuclear power programme. They will project the incident to reinforce their oft-repeated argument that countries like Pakistan are not yet mature and capable of handling nuclear technology.

What is, therefore, needed is a drive to educate the media and leaders of public opinion in matters nuclear by lifting the veil of secrecy and abandoning the attitude of a sacred cow towards nuclear issues. The team of journalists taken to KANUPP the other day was a positive step though taken belatedly. More openness is called for and greater responsive is needed. A thorough enquiry should be held into the incident and the responsibility fixed. Independent experts from international organizations like IAEA should also be invited both to lend credence to the enquiry and to allay any doubts in the minds of people. This will also help fight adverse propaganda against our programme in other countries. The PAEC has to gear itself up against accusations that countries like Pakistan cannot handle nuclear power. Delays, foot dragging and shying away from public will only undermine the credibility of our nuclear programme.

#### Editorial on 'Bold' Nuclear Offer to India

BK2106122589 Karachi DAWN in English  
10 Jun 89 p 7

[Editorial: "Nuclear Offer to India"]

[Text] Pakistan's latest offer to India on the nuclear question is indeed a bold one. Speaking to a joint session of congress on Wednesday [7 June], Prime Minister Benazir Bhutto said Pakistan was willing to throw open its nuclear installations to inspection if other countries in the region did the same. The speech also contained two other elements of Pakistan's nuclear policy, namely, the need for a nuclear-free zone in South Asia and an agreement among Pakistan and its neighbours not to conduct a nuclear test. The prime minister coupled these offers with an emphatic declaration that Pakistan "will not provoke a nuclear arms race on the subcontinent." Taken as a whole the speech constitutes a clear enunciation of Pakistan's stand on the nuclear issue and holds out hope for a lessening of tension in South Asia on this score if New Delhi is willing to respond to Pakistan's offer in a positive spirit. Obviously, New Delhi may not, because that would mean abandoning India's nuclear ambitions. Many impartial observers of South Asia's nuclear scene believe that India already possesses no fewer than 20 nuclear warheads and is in a position to produce 20 to 40 nuclear bombs more within a week or so of making a decision to do so. New Delhi is also developing a capability to manufacture hydrogen bombs, as confirmed by reports of American beryllium finding

its way to India from Germany. Besides, India is no more dependent on foreign sources for nuclear reactors, for it is capable of manufacturing not only nuclear reactors but breeder reactors as well.

Pakistan's position, on the other hand, is above-board. It has not tested a nuclear device as India did in 1974 and it has only one nuclear reactor, the Karachi Nuclear Power Plant (KANUPP), which operates under full international safeguards. Besides, it is a small nuclear plant which is engaged in supplying 136 megawatts of electricity to Karachi. Since 1974, however, the developed world's response to the Indian nuclear explosion has been to punish Pakistan by imposing an unjust ban on the sale of nuclear reactors and other nuclear-related equipment to this country. Faced with this global boycott, Pakistan has been left with no choice but to press on with its modest programme of acquiring nuclear technology. Some of the compulsions Pakistan has to press nuclear technology into service are obvious. The country's hydro-electric resources—undeniably considerable—are limited. Even the fullest exploitation of that potential would generate only 12,000 megawatts, far below the 25,000 megawatts which is Pakistan's projected demand by the end of the century. As for oil, it produces only about 40 percent of its needs, a huge chunk of foreign exchange earnings going to pay for the oil imports. As for coal, the low-quality deposits that are found here have yet to be exploited. With such a low reservoir of the conventional sources of energy, Pakistan is left with no choice but to concentrate on harnessing nuclear energy to meet its growing power demands. And since transfers of nuclear technology for peaceful uses have, if anything, proved even more difficult than transfers of other technologies, it is obvious that Pakistan has got to rely on its available scientific resources to acquire the capacity to use the atom for numerous peaceful purposes. However, political prejudices seem to have made it extremely difficult for this country to pursue its nuclear programme.

Islamabad has made it repeatedly clear that it has no intention of manufacturing nuclear weapons. Even though India's nuclear explosion and its unbridled weapons-oriented programme have created problems for Pakistan, Islamabad has refused to give a military orientation to its nuclear efforts and has asked New Delhi to reciprocate—which it has not done. New Delhi has also not reacted favourably to Pakistan's plea that pending the signing of a nuclear test ban treaty, the two should agree not to test a nuclear device. The only hopeful development is last December's Indo-Pakistan agreement not to attack each other's nuclear installations. This is good as far as it goes, but a more meaningful safeguard against the danger of nuclear proliferation in this region would be for India to prove its bona fides by agreeing to a test ban and mutual inspection of each other's nuclear installations as proposed by Prime Minister Benazir Bhutto. If New Delhi is interested in avoiding a nuclear race in South Asia, as it repeatedly claims it is, it should have no hesitation in accepting Pakistan's latest offer on this score.

**Canada To Provide Aid for Reactor Safety**  
*BK2306162189 Islamabad Domestic Service in Urdu  
1400 GMT 23 Jun 89*

[Text] Canada has agreed to provide technical expertise in the field of nuclear reactor safety. This was stated by the chairman of Pakistan's Atomic Energy Commission, Mr Munir Ahmed Khan, while talking to newsmen informally in Islamabad. He said Pakistan has now joined CANDO Operators Group, which comprises Canada, Argentina, ROK, Romania, and India. This group cooperates with each other in the field of nuclear reactor safety.

The chairman of the Atomic Energy Commission said that Pakistan needs nuclear technology to meet energy demands, which is indispensable for its economic development.

**Krasnoyarsk Nuclear Waste Project Attacked**  
PM2106094389 Moscow KOMSOMOLSKAYA  
PRAVDA in Russian 15 Jun 89 p 1

[N. Savelyev article under the "Regular Daily Spot" rubric: "Tunneling Under the Yenisey"]

[Text] A strange picture opened up before us.... Dead center, there were five very long, rust-resistant pipes looking like five gun barrels mounted in the field. Not a living soul was to be seen near the mobile crane and concrete conduits. In the background, there was a birch coppice, a hamlet, and a dusty road. We (with me in the car were Sergey Zadereyev, a writer, and Viktor Prokopenko, a local journalist) were making our way slowly, with stops, along the pipeline. Around 400 meters into this uninhabited terrain the pipes disappeared, as if they had ceased to exist. The road suddenly turned into a quagmire. We spooked a flock of wild ducks and then drove into the field. From there it was constantly uphill almost to the river itself.

The enormous jaw of the tunnel grinded dark and misty. Several men had lit a fire close by the tunnel. We were greeted very sullenly.

"How do we get to N?", we asked, in order at least to start up a conversation somehow. One of the seated men pointed toward the hill and then turned away without any explanation of any sort.

"What are you building?" Prokopenko asked in an artificially cheerful voice, breaking the prolonged silence. The peasants were not slow to reply: "Surely you know we're building a subway? It's clear, isn't it?"

They know how to keep a secret here. The "subway"—which is nothing less than a burial site being built for radioactive waste material from CEMA nuclear power stations—is coyly called "Site No 27" here. The site has recently given rise to much rumor and commotion. Only now, in the period of glasnost, has it become known what kind of tunnel is being excavated in the birch coppice. But 10 years ago no one dared approach the facility closely, let alone ask questions. If it is necessary then that means it is necessary—these things are more evident on high. And the land and the birch thickets were allocated for the facility on that principle. The compensation—R3 million—was instantly snapped up in the kray center, and from there went still higher. The rayon, however, was left with its "present." The controversy led quite recently to the setting up of an action group.

Journalist Viktor Prokopenko, former militiaman Yuriy Pirogov, and local doctors began picking their way through the screen of mystery and secrecy. At their insistence the kray party committee sent in an impressive commission comprising geologists and specialists from civil defense, the State Committee for the Protection of the Environment, and the kray health and epidemiology station. They measured radioactivity in several

spots and acquainted themselves with the documents. A meeting with the public was then held and an official document read out there. According to this document the burial site will pose no danger to the environment. All the radioactive waste will, after processing, be pumped into the the pipes of the tunnel (under the Yenisey) and thence transported into clay strata situated at a depth of 700 meters. In exchange for living next to the burial ground the villagers were promised new houses, a hospital, and a hog-raising complex. All this munificence, discounting the R20 million already squandered on the tunnel under the Yenisey, comes to tens of millions of rubles spent on piping and concrete. The rustics' heads were supposed to go into a spin at this point over the promised paradise and prosperity. However, the great satirist of the last century was perspicacious when he wrote: "The ordinary folk got quite het up and began to ask questions." Apt questions came thick and fast at the meeting.

"Why has our country been chosen as a dumping ground, and why will a burial ground be built close by a city with a million inhabitants, a city already choking from harmful discharges?"

"Isn't the 15-year-old project now out of date, and how can you talk about high-quality construction work if the construction site is not protected?"

"Why does the tunnel pass under the Yenisey and thereby make one of the world's giant rivers a hostage to fortune?"

"Why is there not a single academic on the commission?"

The questions were abundant. Answers were not found to them all. Representatives of the health and epidemiological station and civil defense repeated a much-loved expression of theirs: "The danger of an accident amounts to ten to the power of minus seven." Milkmaids and stockraisers hurriedly set about calculating the roots of this abstruse formula, but it was immediately explained to them that the danger was equivalent to almost zero. This "almost" disturbed the equilibrium of these arable farmers and stockraisers. Their indignation reached its acme. But an even greater fog of mystery loomed over the vicinity. A. Bolsunovskiy and A. Degermendzhiyev, young environmental scientists, came from Krasnoyarsk of their own volition. They brought with them the text of a petition in the form of a letter to the leader of their institute. It only remained for the chairman of the local rayon soviet executive committee to sign it, but he could not bring himself to do so. And the rayon newspaper was instructed not to publish material on the meeting.

People expected that the Congress of People's Deputies would clear the fog. But the telegrams from the action group and the rural inhabitants were blocked somewhere en route to the rostrum. Although Vasiliy Belov and other deputies made it unambiguously plain in their

speeches that a powerful state should not be turned into a radioactive waste dump. It is not known who is now deciding the fate of the burial ground and where this is being done. It is only known that no good can come to the people of Krasnoyarsk if it is put next door to them. The planned transfer of waste from Europe along such a long tunnel and the concentration of waste in the immediate vicinity of a city with a million inhabitants is daily generating greater and greater alarm. Still greater alarm is caused by the suggestion that we will bury our pride here along with the waste from European countries.

**Deputies' Request**

To the USSR Minister of Nuclear Power Generation  
To the USSR Minister of Medium Machine Building  
To the USSR Minister of Health

How advisable and safe is it to build near Krasnoyarsk a facility for the burial of radioactive waste from European countries' nuclear power stations?

[Signed] V.P. Astafyev, R.Kh. Solntsev, USSR people's deputies

**'Truth' About 1957 Nuclear Accident Revealed**  
*18220151 Moscow TRUD in Russian 21 Jun 89 p 2*

[Article by A. Lyapustin: "Thirty Years Have Passed"]

[Text] The truth about what they now call "little Chernobyl" was hidden from the inhabitants of Chelyabinsk for more than 30 years. However, at the time everyone knew a little or a lot that something had happened. But they did not know exactly what had happened or how dangerous it was.

In those years Western radio broadcasts reported the explosion on the territory of Chelyabinsk Oblast, but there was not a word in our media. In general they tried to hush up accidents and catastrophes, especially at a defense facility.

**What happened in 1957?**

According to B. Nikipelov, first deputy minister of medium machine building, who came to the oblast in response to an inquiry of the USSR people's deputies, a conventional explosion—not a nuclear one—occurred and destroyed a container of radioactive waste. A contaminated cloud covered the territory to a width of 9 km and a length of 100-105 km. More than 10,000 people had to be urgently resettled.

At that time I was studying at a railroad teknikum and was doing my practice work at the Sinarskiy station. I took part in that resettlement. People, frightened by the sudden decision and uprooted from their homes, held out red-banded papers which ordered us quickly to allot containers and sell tickets. Then the evacuated villages were burned. The glow on the horizon was that of a terrible obscurity. Everything done was in low voices or

in minced words. There was a list on the door of the railroad dormitory, explaining how to tell contaminated fish from noncontaminated fish. There was an order not to buy potatoes outside the market. That was all the information.

Do you know how awful it is to see a flowering apple tree when it is flowering next to nettles growing in the ashes of former fires? The obelisk to the heroes of the civil war on the former main street appears like a memorial to the burned village. This spring I saw it again—the green-covered swells of land of that long-ago deactivated area.

Today the numbers and facts state that the emission of radioactive elements was approximately 2 million curies (in comparison, at Chernobyl 50 million curies were released), and the measures to deal with the consequences of the accident cost R200 million (in current prices).

B. Nikipelov reported that no one died in the explosion and that no cases of radiation sickness had occurred. Academician L. Buldakov, the deputy director of the USSR Ministry of Health's Institute of Biophysics, confirmed on Chelyabinsk television that serious consequences had been successfully avoided thanks to speedy evacuation of the population. However, a decrease in leucocytes was noted in about one-fifth of the population on the contaminated zone, and a much sharper decrease in thrombocytes. There was no significant deviation in the level of blood diseases or malignant tumors.

All this is somewhat reassuring. It is good that finally everything has been said openly to the Chelyabinsk residents. It is true that this happened only after widely attended ecological meetings, only after an insistent inquiry by the people's deputies. But the Chelyabinsk residents are not sure that all their questions have been answered.

Not long ago we laid to rest the Chelyabinsk photojournalist Viktor Shanov, who died of cancer and who had a short time before this buried his parents and his wife. They all came to Chelyabinsk from the shore of the river Tech, which to this day is cut off from the villages by a barbed wire fence. To this day one-fifth of that territory has been declared a "preserve." As before, places exist in the oblast where mushroom gatherers advise one another not to hunt.

I think it is now clear why the Chelyabinsk residents reacted so sharply to the news about the construction of the South Urals AES, and why they demanded it be stopped until an ecological evaluation could be carried out. Yes, there is an energy hunger in the Urals. The first "ration coupons" will be introduced not to the population for meat, butter, sugar, soap, and detergent for the population, but to the enterprises, for electric power. Broadcasts on Chelyabinsk radio begin with the weather and the Chelyabenergo report: Today enterprises will be

supplied with power according to schedule number such and such. Why have they made the decision for us? This is what the Chelyabinsk residents ask.

The high-level leadership told the oblast's inhabitants that construction of the AES would be halted until the expert's commission made its conclusions. What has already been built could be reprofiled, let's say, as an instrument making plant. The oblast's inhabitants themselves will make the decision. How will they vote after a small and a large Chernobyl?

**1957 Disaster, Nuclear Plant Siting Linked**  
*18220149 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 18 Jun 89 p 2*

[Article by SOTSIALISTICHESKAYA INDUSTRIYA correspondent N. Terekhin: "The Echo of an Accident Passed Over in Silence for More Than 30 Years"]

[Text] Passions continue to rage in Chelyabinsk Oblast over the issue of whether a nuclear power station in the Southern Urals is to be or not to be.

Following the Chernobyl tragedy, the issue of building a nuclear power station in any region is received with pain. However, this issue is many times more acute for Chelyabinsk: 3 decades ago, a catastrophe happened here, the consequences of which have not been fully eliminated to this day. However, the truth about it has been hidden from the public behind the "top secret" classification for all these years.

A paradoxical situation has emerged: People in the vicinity knew much about what had happened (to be sure, with varying degrees of credibility). However, all questions regarding the causes and extent of contamination ran into the stubborn reluctance of competent organs and officials. The wall of silence was torn down by ecological meetings in the Urals. Their participants stated categorically: A constructive dialogue on the nuclear power station is impossible without learning the truth about what actually happened in September 1957 in the vicinity of the city of Kasli.

Complying with the instructions of their electorate, a group of people's deputies from Chelyabinsk Oblast is preparing an inquiry to the government on the economic feasibility of building the South Urals Nuclear Power Station. Meanwhile, the issue of the need to release the data on the accident was raised with USSR Minister of Medium Machinebuilding L. Ryabev. As a result, First Deputy Minister B. Nikipelov arrived in Chelyabinsk.

According to what he said, then, in 1957, a vessel in which radioactive waste was stored was destroyed by an explosion (conventional, rather than nuclear!) at one of the defense industry enterprises. A cloud of compounds lifted by the explosion covered an area of about 1,000 square kilometers. Its trace, which was 8 to 9 kilometers

wide, extended for more than 100 versts. More than 10,000 people were evacuated from the contaminated zone on an emergency basis.

The release of radioactive elements is estimated to have been 2 million curies. For comparison, it may be said that in Chernobyl it came to almost 50 million. As early as 1978, economic operations were resumed on 80 percent of the contaminated area. On the remaining 20 percent, a... nature reserve was set up. To be sure, houses cannot be built and furniture cannot be made with the trees growing in this preserve. In these "wilderness" areas, the animals and the fish emit radiation as well...

Conventional losses due to the appropriation of land amounted approximately to 7 million rubles a year. About 200 million rubles in contemporary prices was spent in order to clean up after the accident. As the deputy minister sees it, the most important point is that not one person died as a result of the 1957 accident, and not one case of radiation sickness was registered.

Deputy Director of the Institute of Biophysics of the USSR Ministry of Health L. Buldakov gave more details of the medical aspect of the issue speaking on TV. He noted that grave consequences could be avoided due to the timely evacuation of people from the contaminated zone. Nonetheless, reduced rates of leukocytes in the blood were noted in one-fifth of the people residing in the territory affected by the release [of radioactivity], and in rare cases, also of trombocytes. However, no considerable deviations from the norm in both the incidence of diseases of the blood and the incidence of malignant tumors have been registered among the populace. As far as remote consequences are concerned, observations will be made...

In a word, the talk in front of the TV camera boiled down to the fact that the citizens of the Southern Urals have no reason to be concerned about the construction of the nuclear power station as well. Moreover, this accident long ago was not associated with a nuclear explosion or defects in a nuclear reactor. As far as the secrecy surrounding it is concerned, this was due to the defense interests of the country.

In the course of the conversation, B. Nikipelov stressed in particular that at present an independent ecological review of the station design is in progress which will make everything clear. The construction of the unit of the nuclear power station is suspended until the review is completed; work is proceeding on auxiliary installations only. In addition, the deputy minister offered assurances that the Ministry of Medium Machinebuilding would only resume the construction of the power station when the citizens of the oblast as well consent to building it.

It would appear that they have gotten all they wanted. A sincere conversation has taken place, and nobody has anything up his sleeve. After all, has it ever happened that the leaders of one of our most secret ministries

would talk so openly about their failings, even if it dated back 30 years? Everyone would have been happy with the dialogue had it not been for one "but": in the course of the TV broadcast, the citizens of Chelyabinsk have failed to receive answers to quite a few questions.

For example, the people are very apprehensive of the fact that the Ministry of Medium Machinebuilding is still the investor for the nuclear power station which is to make up for the shortage of electricity in the oblast, rather than the Ministry of Power and Electrification. What is the explanation for the site for its construction being selected in the immediate proximity to the very same defense enterprise where the old accident occurred? Is it only the desire to attract to the station the skilled personnel already available here? References to the proximity to the bodies of water with elevated radiation backgrounds, the water from which will be purified by evaporation in the technological circuits of the reactor, appears to be a weak argument. Finally, by now every schoolboy knows that a nuclear reactor produces not only power, but also, say, plutonium used both at nuclear power stations and in nuclear weapons. In turn, the drift of the conversation is such as if the Ministry of Medium Machinebuilding had no need for the station whatsoever.

In a word, there are many questions. It is hard to expect that the citizens of Southern Urals will come out in favor of continuing construction unless exhaustive answers to them are given. Fears of a possible catastrophe cannot be overcome by stories about the participation of enterprises of the Ministry of Medium Machinebuilding in centralized servicing and retooling of the dairy industry of the oblast, its meat-packing industry, and in housing construction.

Unfortunately, many people here, in the Urals, still remember this emergency evacuation, the fear of the unknown, the need to abandon all possessions, including every last chicken, every last bit of firewood. I myself saw large vacant lots covered with stinging nettle where at one time large villages used to be. Out of these villages, the people moved into panel board, so-called Finnish, homes which, as the officials assured, had a life expectancy of 15 years according to some data, and as many as 40 years according to others. Either the guarantees turned out to be inflated, or the homes were assembled in a hurry—either way, at present it is simply impossible to live in many of them. It looks like no one is concerned with this. Given this, how can you believe the promises?

"Even after our meeting with the representative of the Ministry of Medium Machinebuilding here, in Chelyabinsk, many points remain unclear," believes member of the USSR Supreme Soviet Deputy from Chelyabinsk A. Penyagin who, together with S. Naumov and M. Lezhnev, prepared the inquiry by deputies. "Yes, indeed, there is a shortage of power in the oblast. As a metallurgist, I know this well. On the other hand, why is only the construction of the nuclear power station being argued

about, and alternative variants do not figure in the discussion at all? First of all, [there is] the issue of using energy-efficient technologies. Western countries have long been following this route. We still do not have an efficient, solid, scientific program. Virtually no progress is being made on the issue. Let us assume we will build the nuclear power station, and in 30 years the energy units will have to be dismantled. Who will answer for that?"

At present, the citizens of Chelyabinsk are expecting the conclusions of the commission of experts. However, even if it comes out in favor of building the station, are the citizens of the region going to make such a decision? It is difficult to convince the people that the nuclear power stations are safe following the 1957 explosion in the Urals and the Chernobyl accident. There should be a maximum of sincerity in this kind of conversation. However, this is, unfortunately, not the way the conversation turned out. Everyone understood this based on the following detail. The host of the TV program asked twice why the river Techa still flows between two rows of barbed wire, fenced off from the entire world and villages on its banks. Twice this question went nowhere, and was left without an answer. Is this the arrogant silence of the ministry once again?

**IAEA Approves Gorkiy Nuclear Plant Site**  
*18220150 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 21 Jun 89 p 1*

[Article by TASS correspondent S. Turanov, special to SOTSIALISTICHESKAYA INDUSTRIYA: "No Man Is a Prophet in His Own Land"]

[Text] Vigorous protests by the citizens of Gorkiy against the construction of a nuclear heating plant (AST) in the vicinity of the city prompted an invitation for experts from the IAEA [International Atomic Energy Agency], affiliated with the UN, to evaluate its safety (SOTSIALISTICHESKAYA INDUSTRIYA, 10 June 1989). Recently, this group completed the first stage of its work—an expert review of safety features of the Gorkiy AST design. A meeting with representatives of the public in the House of Culture of the I.V. Kurchatov Institute of Nuclear Energy became sort of a report by the group on the results obtained.

Head of the group Ye. Yaremi stated immediately: "We believe—and this is a unanimous opinion of all members of our group—that the master draft of the Gorkiy Nuclear Heating Plant has been done to a high standard. Increased safety of the nuclear plant is ensured by the main equipment being located in one building and isolated from other elements of the station on the principle of "Russian nested dolls." The volume of hollow space in the building is selected in such a manner that in the event of loss of sealing in the reactor circuit the fuel of the active zone will always remain under the water line. The pressure and temperature of the heat transfer agent are substantially lower than in power reactors:

pressure—by a factor of 10, and average water temperature—by a factor of 2. The average temperature of fuel is also considerably reduced, which is responsible for a noticeable reduction in the yield of products of its fission.

The experts gave high marks to the peculiarities of design of the reactor housing which make it possible to retain radioactive products within its confines even in the event of loss of sealing. Among the advantages, they also mentioned the fact that in the event of an accident at the reactor installation the transfer of heat from it will last for at least a week, which rules out the overheating of the active zone.

The principle of natural circulation of the heat transfer agent is used in the reactor of the Gorkiy AST, which makes it possible to do without pumps or other means of forced circulation of water through the active zone, which are prone to failures. The station has considerable momentum: its systems respond to the actions of the operator after a considerable period of time. This does not only make his work easier, but also provides considerable leeway for correcting eventual mistakes. Proven materials and components which have already been used at nuclear power stations the world over are used in the design of the reactor.

"Here is one more point which greatly impressed us," continued Ye. Yaremi. "It is the number of tests which the equipment for the station has undergone. These have mostly been large-scale experiments. Their number has been considerably higher than is usually done on most reactors in the West...."

"No man is a prophet in his own land"—states the biblical piece of wisdom. However, even the group of 16 IAEA experts, which included leading specialists from nine countries, did not immediately succeed in gaining trust.

"Can your evaluation be considered objective given that all of you as specialists are interested in the existence and development of the nuclear energy industry?"

"This is no reason for endangering one's reputation," came the answer. "All the more so because, with regard to this specific project, all of us are independent persons. Besides, no pressure has been brought to bear on us...."

"My relatives live in Gorkiy," said one of those present. "This is why I am concerned with the degree to which design solutions guarantee the safety of the station. Secondly, will the water in the Volga become contaminated as a result of its operation?"

"The operation of any nuclear power station involves a degree of risk," responded Ye. Yaremi. "However, given the approach which is contained in the design it is difficult to conceive of a possibility of a serious accident.

I am convinced that the nuclear heating plants are safe. I live in Toronto, where such a station is situated in the immediate vicinity of the city. It does not occur to me to fear an accident there."

"In its concept and characteristics, the Gorkiy AST approximates nuclear stations built in the West," added Dr K. Gotzman from the FRG. "This indicates that the engineering thought is working in the same direction—toward improving the safety of stations."

With regard to the possible contamination of the Volga, the Turkish expert A. Gerpinar noted that the hot water is isolated from the reactor. For this reason, contamination of the river is ruled out. However, even if the possibility of an accident is assumed, in this case as well the release of radiation will be blocked instantly.

"What if an accident occurs due to 'external sources'?"

"The station will withstand a direct hit by a falling plane," reassured Ye. Yaremi. "Besides, its design is capable of [withstanding] the impact of a shock wave of up to 0.5 kilogram per square centimeter."

The British expert C. Hall, taking part in this "round-table" of sorts, noted that emergency protection systems would kick in in the event of an eventual reactor malfunction. In evaluating the psychological regimen of work by an operator at a nuclear power station as compared to driving a car, riding a bicycle, or walking in the woods, Ye. Yaremi opted for...a walk in the woods.

Soviet specialists also took part in the meeting with the public. In particular, responding to the question on the prospects for AST construction, First Deputy Chairman of the USSR Gosatomenergonadzor [State Committee for Safety in the Atomic Power Industry] V. Sidorenko stated that similar stations will be built in the vicinity of Voronezh and Arkhangelsk. Science director of the project I. Sokolov added that building them is also planned in Bryansk, Ivanovo, and some other cities.

"In Arkhangelsk, they are protesting against this," came the immediate retort. "Is it correct for the population to take part in resolving the issue of whether to build a station?"

"It is exactly the population that has to make a decision," answered V. Sidorenko. "However, to this end it should also have objective information about the consequences of using alternative energy sources...."

The results of the first stage of the international expert review have reduced to a degree the doubts regarding the safety of design of the Gorkiy AST. In August, one more group of IAEA experts will conduct a 3-week examination in Gorkiy aimed at establishing the conformity of

implementation to design solutions, and will check out all elements of the station. Based on the check, a final "diagnosis" of the safety of the Gorkiy Nuclear Heating Plant will be made.

**Nuclear Reactor Claimed 'Absolutely Safe'**  
PM2306113989 Moscow SOVETSKAYA ROSSIYA  
in Russian First Edition 22 Jun 89 p 1

[TASS report: "Safe Reactor"]

[Text] Sverdlovsk—Problems of safety in the nuclear power industry and the construction of fast breeder reactors are the theme of an all-union scientific and technical conference being held at the Beloyarsk nuclear electric power station [AES].

"Our station is one of the oldest in the country," V. Vylomov, acting chief engineer of the Beloyarsk AES, said. "In its 25-year existence the station has operated various types of reactors, including fast breeders, which make it possible to generate electricity and produce new nuclear fuel at the same time. The level of the station specialists' skill is so high that dozens of its former leaders have been invited to work at many other nuclear electric power stations in the country and abroad."

The Beloyarsk AES's fourth fast breeder reactor is now under construction and intensive work is in progress to enhance system and equipment safety. Specialists in the sector recently produced a design for an absolutely safe modular reactor, based on experience gained here, which participants in the conference will see for themselves.

**Foreign Experts Study Radiation Protection**  
LD0107141489 Moscow TASS in English  
1751 GMT 30 Jun 89

[Text] Moscow June 30 TASS—On request of the USSR Government, the World Health Organisation (WHO) sent a group of experts to the USSR to analyse the questions of effective radiation protection for the population living in the area of high radioactive levels due to the Chernobyl accident. The group consisted of Prof. D. Beninson, chairman of the International Commission on Radiation Protection (ICRP) and director of a department of the Argentine Atomic Energy Commission, Prof. P. Pellerin, chief of Radiation Protection Services of the French Health Ministry, member of the ICRP, and Dr. P. Waight of Canada, chief of the Radiation Protection Section of the WHO Secretariat.

The group attended a meeting of the national radiation protection commission of the USSR, visited the Mogilev and Gomel regions of Belorussia, held meetings with local medical staff and population's representatives in the cities Cherikov and Chechersk, and had meetings with scientists of the Belorussia Academy of Sciences. In the Ukraine, the group visited the Radiation Medicine Centre of the USSR Medical Science Academy and took part in discussion with scientists of the centre and

Ukrainian Academy of Sciences. Prof. P. Pellerin visited the district centre Narodichi. All the meetings have been shown on TV and covered by the press.

On the basis of all discussions the expert group endorsed and supported the proposal of the National Radiation Protection Commission of the USSR to adopt the concept of a lifetime dose of 35 rem (for 70 years) as a limit following the accident. The value of 35 rem is based on international assessments of the risk to health from ionising radiation. The experts felt that a dose level, and not a ground deposition level, was the appropriate limit. The experts volunteered the view that, had they been requested to set a level for the lifetime dose, they would have chosen a value of the order of two to three times higher than 35 rem.

WHO experts also noted that in some cases, scientists who are not well versed in radiation effects have attributed various biological and health effects to radiation exposure. Meanwhile these changes are much more likely to be due to psychological factors and stress. Attributing these effects to radiation not only increases the psychological pressure in the population and provokes additional stress related health problems. It also undermines confidence in the competence of radiation specialists.

The experts were convinced that the 35 rem lifetime dose was the minimum to consider to relocate people which should be based on the local conditions, the costs involved and individual preferences. The experts noted that the lifetime dose limit included the contribution from contaminated food and that the Soviet standards were similar to the levels adopted by the European Community for unrestricted trade in food and lower than the WHO guidelines for contaminated food. It was also noted that the importation and consumption of uncontaminated food, if feasible, could significantly reduce the dose from ingestion. Food processing, filtering and other measures can also reduce the level of food contamination.

The experts noted with satisfaction that they had access to all information. However, in view of the perception that the data was not freely available, every effort should be made to ensure that the information is made available on a routine regular basis, perhaps through the appropriate academies of sciences and medicine in the republics.

The experts praised the efforts in dealing with the accident in Chernobyl and its aftermath. They are of the opinion that the experience gained by the Soviet scientists who dealt with this catastrophe places them in the forefront of nuclear accident management and they have a unique opportunity to assist other countries in the development of their emergency plans. The scientists expressed the hope that this expertise will be sought by and made available to the appropriate organisations whose programs are directed towards emergency preparedness.

**Protected Belorussian Radiation Zone Violated**  
*18001272 Minsk SOVETSKAYA BELORUSSIYA  
in Russian 4 Jun 89 p 4*

[Article by Ye. Kozulya: "When an Ukase Is Not an Ukase"]

[Text] Yet another preserve has appeared on the map of Belorussia—the Polesskiy State Radiation-Ecological Preserve. It was created not for its own sake, but as the result of the situation that came about after the accident at the Chernobyl AES [nuclear power station]. This was done for the purpose of "...ensuring the preservation of the territory and the bodies of water with all their inherent natural features and systems, and the strict observance of the nature preserve program..." and, of course, for conducting certain scientific work.

Some 142,000 hectares of meadows, fields, forests, dozens of populated points abandoned by people... The care and supervision of such a territory requires no small number of specialists armed with equipment and means of transportation and communications and having scientific support. The BeSSR [Belorussian Soviet Socialist Republic] Academy of Sciences and the BeSSR State Committee for the Protection of Nature, in developing a position on the preserve, preliminarily determined the staff to number 887 people. It was envisioned that in the future this figure would be reduced to 453. There are 53 workers there today. This is the staff with which Director Aleksandr Dmitriyevich Konopatskiy works; he has taken upon his shoulders this far from heavenly corner of Polesye [woodlands]. And the problem is not only one of finding people who wish to work in the dangerous zone, but also one of financial provisions, which for now, alas, are only on paper.

The inadequately effective preservation of the reserved territory led to a state where during the most recent winter-spring period alone over 1,000 cubic meters of plantings exposed to radiation were cut here without authorization. The forest areas (there are over 75,000 hectares in the preserve) have been deprived of the most elementary fire protection: Over 3 years the block clearings have overgrown and protective mineral strips have not been renewed, and as a result the first alarming signal: A fire that sprang up on the territory of the Ukraine covered 100 hectares of the preserved zone in Narovlyanskiy Rayon with a firestorm. Over 40 hectares of forest burned up, as well as several housing and farm structures in the abandoned village of Dovlyady. The zone of the fire became a center of radioactive discharge into the atmosphere. No one can predict where the wind carried the remaining radioactive ash...

And here is one other aspect of the problem. The deputy director of the Gomel Oblispolkom [oblast executive committee] UVD [Administration of Internal Affairs], militia Colonel Anatoliy Andreyevich Kuzmenkov, reported that the "Chyrvonaya Ukraina" kolkhoz [state farm] of Braginskiy Rayon conducted sowing work on a

112-hectare plot near the village of Chikalovichi on territory of the preserve, on lands that are excluded from crop rotation. What guided the kolkhoz chairman, M.A. Novikov, in committing this unlawful act? And who called him to account for it?

Incidentally, no one is in a hurry to ask. The militia organs, in accordance with the Ukase on Administrative Responsibility, are taking preventive measures against violation of the program in the radioactive zone. But alas, local justice prefers to remain silent. Thus, V.N. Golovchenko, senior judge of the city of Bragin, has been given for consideration about 100 depositions against those who are not observing the ukase, but on various pretexts he is refusing to review these documents. So, for the judge is it that the ukase is not a ukase? And is it not time that all those involved in the fate of the Polesskiy Preserve understood that it awaits immediate assistance? Not on paper, not by telephone, but actual assistance.

**Ryzhkov, Belorussian Deputies Discuss Chernobyl**  
*PM2106095789 Minsk SOVETSKAYA BELORUSSIYA  
in Russian 6 Jun 89 p 1*

[BELTA report: "Meeting With USSR People's Deputies"]

[Text] N.I. Ryzhkov, chairman of the USSR Council of Ministers, met a group of USSR people's deputies, representatives of the public of Gomel and Mogilev Oblasts, and Belorussian Soviet Socialist Republic [SSR] leaders on 3 June. They examined pressing problems linked with the elimination of the long-term consequences of the Chernobyl accident.

In the course of an exchange of opinions the deputies set out voters' requests and instructions and spoke about the matters that are still arousing concern in the population of the areas that were exposed to radioactive contamination following the accident. During the conversation great attention was drawn to the need to enhance the effectiveness of measures to improve health protection for the population of the afflicted areas and improve their material position and social security.

Support was voiced for the proposal from the Belorussian Communist Party Central Committee and the Belorussian SSR Council of Ministers regarding the elaboration of a long-term comprehensive state program for eliminating the consequences of the accident at the Chernobyl nuclear power station. Concrete decisions were adopted on a number of questions of paramount importance.

**IAEA Conference in Dimitrovgrad Concludes**  
*LD2406090989 Moscow TASS International Service  
in Russian 1740 GMT 23 Jun 89*

[Text] Dimitrovgrad (Ulyanovskaya Oblast), 23 Jun (TASS)—The further development and improvement of nuclear reactor building holds the key to the most

rational solution not only of energy problems, but also of the acute ecological problems facing the world community. This was particularly emphasized at the 11th international conference on nuclear power of the International Atomic Energy Agency (IAEA) technical committee's sessions which ended today in Dimitrovgrad.

Taking part in them were the USSR, China, Bulgaria, Poland, Czechoslovakia, Romania, and Yugoslavia, as well as representatives of the United States, Great Britain, Japan, France, the FRG, Switzerland, the Netherlands, Italy, Indonesia, and Turkey.

For 5 days the representatives of these countries and of international organizations exchanged views and experiences on specific issues directly connected with the design, licensing, construction, operation, and safety of high-temperature gas-cooled reactors. It was noted that the future belongs to such reactors, since they make it possible to exclude accidents such as Chernobyl, regardless of all human error and unforeseen equipment failure.

"This differed from previous similar meetings," learned IAEA secretary Jurgen Kupitz [name as received] told TASS, "in that among the participants there was a preponderance, not of research scientists, but of managers, in other words, experts directly involved in the practical application of the best plans. It is entirely natural that the meeting should have subjected to especially rigorous examination both the technical aspects and economic and the ecological ones, and the issues of nuclear and radiation safety." We have every reason to express satisfaction with the way the meeting went, the learned IAEA secretary said. The review reports, which nearly all the representatives of the delegations delivered, were constructive and above all, open.

In the opinion of the IAEA leader, the Soviet side is making a substantial contribution to the development of businesslike cooperation and scientific contacts; more than half of the reports examined at the IAEA technical committee were by scientists and experts from the Soviet Union.

## CANADA

### New AECL President on Second Generation Design Plans

51200026 Ottawa *THE OTTAWA CITIZEN* in English  
25 Apr 89 p C3

[Article by Alan Toulin: "New President Aims To Increase Sales To Fund Basic Research"]

[Text] The new head of Atomic Energy Canada Ltd. vows to keep Canada's nuclear agency intact during a time when government spending cuts are the order of the day.

"I wouldn't have accepted the appointment if I believed the industry was at the end of the rope," says Stanley Hatcher, an atomic scientist who has spent most of his working life associated with AECL. "As I told my employees, I'm a builder not a wrecker. I didn't come in to destroy the company."

Hatcher, who joined AECL in 1958 after getting a doctorate in chemical engineering at the University of Toronto, was appointed acting president and chief executive officer of the Crown corporation at the end of March.

Hatcher expects that Canada's nuclear program will once again be at the forefront of the country's energy and science policies, although the way the nuclear effort is structured and funded may change.

"I think the Minister (Energy Minister Jake Epp) wants to negotiate, with the provinces and the utilities, the basis of a re-vitalized national program in which the federal government would take a leadership role," Hatcher says.

A partnership and shared funding between the federal and provincial governments would allow AECL to restore both its scientific purpose and its commercial purpose as the designer and seller of nuclear plants. Canada, which pinned high hopes on the commercial aspect of selling nuclear reactors overseas during the 1970s, hasn't sold a CANDU reactor since 1982.

Hatcher thinks the market for nuclear power plants will revive and he is committing AECL to work on a design concept for the so-called second generation of nuclear plants.

"We want a standardized off-the-shelf design, one that's pre-licensed so that you can build it quickly and one in which we've simplified things," Hatcher says.

This generic plant could be expanded or contracted in size and generating capacity to meet different market needs.

"The one we're paying the most attention to at the moment is the CANDU 3, which is roughly 450 megawatts, and that's an ideal size for some of the smaller utilities and an ideal size for the export market," Hatcher says.

The nuclear plant business is expensive, however, and Hatcher hopes to share some of the costs with Ontario, which has its own nuclear design capability in Ontario Hydro. So far no details of the funding arrangements necessary to embark on this program are available.

The federal government has plans to privatize some of the components of AECL, particularly its two subsidiaries, Nordion International Inc. and Theratronics Ltd., which have developed commercial applications derived from nuclear technology.

But Hatcher maintains AECL should continue to maintain some level of ownership in these successful subsidiaries.

"The key to privatization is to get it arranged in such a way that the private sector benefits and the laboratories—the ones who generated the new technology in the first place—also benefit," Hatcher says.

"That's one of the things we will be addressing with the government—how to use the technology to get a cash stream back into the laboratory. That, in turn, should be able to reduce the level of federal funding for research and development."

### Heavy Water Leak Plugged at New Brunswick Plant

51200025 Toronto *THE GLOBE AND MAIL*  
in English 16 May 89 p A4

[Text] Point Lepreau, N.B. (CP)—New Brunswick Power plugged a pinhole yesterday morning that was leaking heavy water at its Point Lepreau nuclear power plant. Spokesman Terry Thompson said the leak posed no risk to the public or staff at the generating station. The small amount of heavy water that escaped was contained within the reactor building and was continuously recovered, he said. The reactor was shut down briefly Sunday night and again yesterday morning so technicians could carry out the repairs. Mr. Thomson [as published] could not provide details of how much heavy water had leaked through the pinhole, but said it was similar to a leak at the plant last year, in which heavy water in the form of steam leaked at a rate of 10 kilograms an hour.

## FEDERAL REPUBLIC OF GERMANY

**Government Said Involved in Technology Transfer**  
36200189 Hamburg *DER SPIEGEL* in German  
12 Jun 89 pp 70-86

[Unattributed article: "We Simply Have an Open Door," SPIEGEL Report on the Federal Office for Trade and Industry—West Germany's Most Unusual Government Agency"; first paragraph is DER SPIEGEL introduction]

[Text] Weapons exports to problem areas, illicit sales of nuclear materials to the Third World, chemical plants for Qadhafi—scarcely an export affair in which the BAW [Federal Office for Trade and Industry] in Eschborn is not involved. At the "agency of tears," as government officials themselves refer to it ironically, trouble is brewing as nowhere else. Now the state prosecutor is also taking an interest in the scandal-ridden agency: In mid-May, the home of a former government director of the agency was searched.

The management at Gildemeister AG appeared extremely surprised. In March, state attorneys and customs inspectors marched into the offices of this machine tool manufacturing facility in Bielefeld, read files, and thumbed through accounting receipts. But the gentlemen on the management floor did not really understand what it was all about.

The reason for the search, one manager angrily reported later to a business associate, was an export deal that had been concluded in close cooperation with the experts at the BAW in Eschborn. "They discussed all of it with us," said the man from Gildemeister indignantly.

The investigators were interested in the so-called Saad 16 project—a technology center being erected near the Iraqi city of Mosul, at which medium-range missiles and chemical weapons were to be developed, according to intelligence information. This complex, equipped with electronics workshops, wind tunnels, and an underground firing range, was considered one of Iraq's most ambitious armaments projects. A dozen West German firms are on the list of suppliers, lead by the Gildemeister subsidiary Projecta and the armaments producer Messerschmitt-Boelkow-Blohm (MBB).

Two days after Whitsuntide, state attorneys were at the home of now retired BAW employee Guenter Welzien, 67. The investigators had obtained a search warrant for the home of this retired government director who was involved in the Gildemeister business before his retirement. At Welzien's home they were looking for any papers he might have saved that would provide information on how cooperation between government officials and the companies requesting permits had resulted in permits for the business in Iraq.

The companies involved certainly did not have to pursue any forbidden avenues of export in order to implement the Iraqi missile program. For testing stations and control systems they were able for the most part to show official whitewash certificates—the BAW supervisors in Eschborn had evaluated the shipments individually and found them permissible while closing their eyes to the overall project.

The state attorneys in Bielefeld have doubts as to "whether that was quite right." Informed sources say that those involved at the BAW advised arms exporters on how to circumvent export bans—for a fee whenever possible. Western intelligence services have long been spreading the word that individual officials were "not reliable."

What is certain is that the BAW, in a so-called clearance certificate "for submission to customs officials," assured Gildemeister's Projecta that "mechanical and electrical equipment, and control, measurement, and testing devices for a research, development, and training institute with eight main divisions, identified as the Saad 16 project, require no export permit according to current regulations."

On 9 April, only after the affair had become public (SPIEGEL 13/1989), the agency conceded and withdrew the whitewash certificates for Gildemeister. At the time, the state attorneys were already looking through the 500 confiscated binders full of evidence.

The West German government was severely discredited among its allies: In an international agreement in 1987 Bonn had agreed not to provide sensitive support technology to third countries. Consequently, the missile deal should not have been permitted under any circumstances.

Saad 16 is no isolated case and BAW's man under scrutiny, Welzien, is no isolated figure: Officials in Eschborn have been involved over and over, whenever Bonn has ended up in the whirlpool of international scandal.

Whether it was the submarine blueprints deal with South Africa, the numerous nuclear exports to Pakistan, or the current missile deal with Iraq—it has always been these same export supervisors in Eschborn who were extremely liberal in their interpretation of export regulations.

They have preferred to let an occasional foreign policy time bomb slip through than deny a West German firm export rights. Officials in Eschborn, with such an agency policy, have found themselves in silent complicity with their superiors in Bonn's Ministry of Economics: What it was possible to export was not to be stopped unnecessarily by the agency.

So it happened—nuclear weapons ban notwithstanding—that tons of heavy water from nuclear materials dealer Alfred Hempel of Duesseldorf, and 95 kilograms of beryllium from the Hanau firm Degussa went to India, which is working on the hydrogen bomb. India's arch-foe Pakistan, on the other hand, received valves, vacuum pumps, and brazing furnaces for its nuclear program from the West German firm Leybold Heraeus, and allegedly ordered testing equipment for missile development from Aviatest in Duesseldorf.

Special computers from armaments producer MBB went to Argentina for missile guidance systems; a control system from Siemens AG ended up in Libya; special machine tools for submarine construction from Japan's Toshiba, which were assembled in West Germany, were obtained by the Soviet Union—all, some via export permit, some via clearance certificate, were approved by the agency in Eschborn.

If large export orders caused problems with export permits, insiders report that BAW experts were known to suggest the so-called splitting procedure: The orders were divided up into individual shipments and therefore could be considered legal—close your eyes and let them through.

Whenever possible, this was also the case with Gilde-meister. The state attorneys in Bielefeld are currently researching whether officials were aware of the magnitude of the total order. Therefore, they have also asked several other BAW employees to appear for questioning in addition to Welzien.

Diplomatic dispatches and protests from Washington, London, and Paris have long been stacking up at the Foreign Ministry. Among the allies, West Germany is suspected of having violated the spirit and the letter of the nuclear weapons ban and—using Qadhafi's poison gas as an example—of being prepared to walk over corpses in order to achieve a trade balance.

"We simply have an open door," is how Hermann Bachmaier (SPD) [Social Democratic Party of Germany], chairman of the Nuclear Research Committee in Bonn, described the supervisory practices in the "agency of tears," as it is ironically referred to within the government itself. "Free rein for deal makers," is the slogan of the agency in Eschborn, says Maria Luise Teubner, Greens party Bundestag deputy.

The agency, which is in fact the central government office for export supervision, is considered by many diplomats in the Foreign Ministry simply a "pigsty." It has also long been at odds with other supervisory agencies. Customs investigators, state attorneys, and intelligence officers have the same complaint—that the Eschborn agency is "purely an institute for promoting exports" and frequently hinders investigations of companies.

The civil servants in Eschborn, when confronted with such accusations, just shrug their shoulders. "We have no room whatsoever for latitude," maintains BAW spokesman Norbert Goworr, 33. He says that the agency adheres strictly to Bonn's export regulations and to "policy stipulations."

The wish of the politicians—regardless of party affiliation—has always been "the quickest and smoothest possible handling" of West German exports, says Lorenz Schomerus, 55, department head for foreign economic policy at the Federal Economics Ministry (BMWi) of Helmut Haussmann (FDP) [Free Democratic Party]. According to Schomerus, "There was no interest in strict controls."

West German exporters must have actually felt as if they had grown wings when the agency was created 35 years ago on Bockenheimer Landstrasse in Frankfurt. While previously foreign trade had been strictly regulated by the decrees of the occupation forces, Bonn completely revamped the procedure with the Foreign Trade Act of 1961. From then on, essentially any export from West Germany was permitted. Any restrictions, according to the text of the law, were "to be stated such that freedom of economic activity is interfered with as little as possible."

BAW president Hans Rummer, 58, also drummed this principle into his new employees. This honorary professor (who has a law degree) at the Pforzheim Vocational School, and who, as the gossips say, prefers teaching "import-export restrictions" to his students to demanding similar behavior from his employees, likes to refer again and again to the name of his agency: "Federal Office for Trade and Industry"—not against.

The agency which Rummer has headed for 14 years is structured accordingly. A large number of the approximately 500 employees, who moved from Frankfurt in 1975 to a 14-story administrative building in Eschborn, are basically concerned with the distribution of subsidies—from coal subsidies to film subsidies. Supervision of the more than 15 million annual export transactions, on the other hand, has traditionally been understaffed.

Only 16 officials work under Hans-Peter Niepold, 44, the section head for foreign trade supervision. Another 63 employees are involved in investigating and issuing more than 70,000 export permits each year, as well as drawing up more than 23,000 international import certificates and, if the article to be exported is not an embargoed item in their view, giving the "all clear" informally or via clearance certificates to export freely—in official jargon: "rubber-stamping."

Insiders describe working conditions within the agency as medieval—making copies of transactions involves going long distances, the EDV [electronic data processing] system is "an improved note pad" and the filing system is "from the days of Bismarck."

An export permit is stamped up to 20 times before it leaves the building. However, the number of stamps does not verify the quality of the review—on the contrary: “The constant shifting back and forth of requests,” reports one BAW man, lead to “the inability to locate” a particular request. “This constant searching,” takes up, “conservatively estimated, 20 percent of the working time” of the review personnel.

Which export goods require permits is determined by Bonn’s export list. This listing is based on the so-called COCOM list—named for the Coordinating Committee for East-West Trade Policy agreed to by 16 Western nations 38 years ago in order to prevent sensitive Western technology from getting to the Eastern Bloc.

Translation problems are not excluded: For three years, special computers suitable for weapons and missile programs were able to leave West Germany without permits because the English word “any” had been mistranslated. Only those computers were thought to require permits which fulfilled all of the conditions stated in the list and not, as intended by the COCOM authors, any one of the conditions.

When the COCOM list is updated every year at the U.S. embassy in Paris, BAW officials are usually present on the German side: Because the highly compensated ministry officials are not familiar with the technical details, they are advised during the meetings by the senior executive officers from Eschborn.

On the other hand, they do not feel that they are on firm ground either. Therefore, they are happy to obtain advice from companies. Now and then the honorable men at the BAW direct their inquiries directly to the criminals.

For example, when in Paris in 1987 the discussions centered on “deuterized compounds” (heavy water), the agency in Eschborn turned to Duesseldorf’s Alfred Hempel AG, of all places. The already well known heavy water dealer was expected to provide tips on what, whenever practicable, could be kept off the embargo list.

At Bonn’s instructions, individual BAW employees spend up to 80 working days per year at international conferences in Paris, Vienna, or elsewhere. In the meantime, the work piles up at home. Precisely two and a half staff positions in Eschborn are devoted to reviewing the approximately 120,000 reports per year regarding the import and export of radioactive substances such cobalt 60 and tritium—they must dispose of 26 cases per hour.

A quick glance at the paper is all that is possible. Necessary information is also frequently lacking. For example: In order to evaluate the reports, the BAW would have to know what amounts of radioactive substances the respective firms are even allowed to have.

This information can be found in the so-called handling permits issued in accordance with the Radiation Protection Ordinance, but the agency usually does not have them available.

“It is very possible,” confirms a BAW employee, that commercial lots of tritium, the gas so useful for making bombs, are sent back and forth in amounts for which the respective companies do not even have handling permits. It apparently did not occur to the officials that this was a serious lack of supervision until after a conversation with the editors of SPIEGEL: Three weeks later they requested in memos to their respective clients that each send the agency copies of “your handling permit.”

As long as such information is not available, all the doors are left wide open for abuse, as Manfred Ruck, 47, BAW section head for chemistry and radioactive substances had to admit to the Nuclear Investigative Committee in Bonn.

When Ruck’s people, after the fact, checked over long-since completed exports of radioactive materials sometime last year, “many, many” irregularities were discovered. Ruck: “If these substances end up in the wrong hands, this is a serious violation.”

The “small exotic area” (according to Rummer) of nuclear fuels, included among the goods requiring permits in accordance with the Atomic Energy Act, is so hopelessly understaffed that, also according to Ruck, “there is not time for proper processing by the staff.”

What slips through the agency is also not held up by customs. “An inspection of the goods can hardly take place” at the border, as Juergen Rump, 45, section head responsible for foreign trade controls at the ZKI [Customs Criminal Activities Institute] in Cologne reported to the committee in Bonn. “Customs controls” are handled, he said, “strictly on paper.”

According to standing instructions, shipments containing radioactive substances are “to be processed as quickly as possible.” He could “not recall,” said Rump, that West German customs “was ever aware” of an illegal nuclear export.

No wonder: Customs officials, too, are more interested in protecting the West German economy against undesirable cheap imports than in tracking down the black sheep among exports. Of the approximately 800 customs officials who patrol Hamburg harbor every day, only about 30 perform a random check of the papers accompanying export goods. At the same time, the 770 import inspectors check over the containers and shipping crates containing imported goods “in fine detail,” reports Karl-heinz Schmidt of the Hamburg Regional Finance Directorate.

If an item for export is actually held up, someone from the "agency in charge" (Schmidt's words) must hurry right over: one of those totally overworked fellows from the BAW. The Eschborn agency alone decides, based on the export list, what requires permits and what does not.

Therefore, a clearance certificate (called an "NB" in official jargon) from Eschborn works like an open sesame at the border crossing gate: No one dares to contradict the BAW's interpretation.

In accordance with agency head Rummer's motto that every company has "a right to expect that a request for an export permit from the BAW will not be checked so thoroughly that the contract is lost," a "self-pickup service" was initiated "for urgent cases": The coveted "okay certificates" can be picked up only a few hours after the request is submitted.

Sometimes requested information or instructions from the economics ministry are not taken into account during the standard paper reviews—even though top BAW officials, as Rummer emphasizes, "come together in person several times a week" to coordinate with their colleagues at headquarters in Bonn.

In 1987, for example, officials "rubber-stamped," i.e., no permit required, the export of three ultrasound testing devices from the scandal-ridden firm of Nukem in Hanau, which were intended for testing fuel element casing tubes in South Africa—even though, by order of the economics ministry, Bonn was to be informed of everything that went to that racist nation.

When the state attorneys last December became interested in exports to South Africa, the ministry first had to make inquiries in Eschborn. Another export permit for an additional testing system, issued in May 1988 also for South Africa, came promptly to light.

Only after the fact did Bonn also find out that in 1986, in an urgent processing action at the BAW, specialized American computers had slipped through to Pakistan which were suitable for "controlling weapons systems," as experts in Bonn's research ministry discovered following protests by the Americans.

During the subsequent review, the experts found out what their colleagues at the BAW had overlooked in the rush: The stated use could not have been correct; the devices were supposed to be used in Pakistan for payroll accounting—"a special application," say research ministry officials, for which the computers supplied were not at all suitable.

That "problems with permits" have occurred again and again is freely admitted by section head Schomerus. Because they were so "loaded down with harmless requests," the people in Eschborn could not adequately

follow up on "the more suspicious cases." Schomerus: "If we had known exactly what some of this was for—perhaps we would have decided differently."

Frequently the officials did indeed know exactly for what purpose forging presses were going to Iraq and special milling machines to Pakistan, for example. These types of things were nevertheless classified as not requiring permits because, as section head Hans-Juergen Spies of the economics ministry maintains, the criterion of how such goods would be used was "irrelevant."

Sometimes, however, the agency has taken an interest in the stated use after all: When it was in the interest of a given requestor. That is what happened with Rudolph Maximilian Ortmayer, 52, one-time manager of Neue Technologien GmbH (NTG) of Gelnhausen, whom the state attorneys in Hanau, Albert Farwick and Reinhard Huebner, suspect of violating the Military Weapons Control Act.

Four years ago, when Ortmayer wanted to sell a so-called heavy water cleaning system to Pakistan, economics ministry officials in Bonn found a "legal situation clearly favoring NTG," based specifically on the alleged intended use (according to Spies, "environmental protection, radiation protection"). A representative of the Foreign Office angrily noted that the economics department in other cases always considers the "subjective intended use" to be "irrelevant."

The diplomats got wind of it because Ortmayer had "unfortunately" (according to the BAW) explained in writing the procedure for extracting tritium—the substance used in bombs—from heavy water. Because "even small amounts of tritium," according to Foreign Office officials, were sufficient "to set off a fission bomb," they urged a restrictive attitude.

At this point in time, however, section head Spies of the economics ministry and BAW man Ruck had long been having "in-depth discussions" (according to Huebner) with the NTG manager; a visit to Ortmayer over sherry and numerous telephone calls to him fostered this contact. Ultimately, Ortmayer even received a copy of the draft of an internal letter. Later on, the BAW also evaluated the system entirely from Ortmayer's viewpoint: The system was rather harmless—equivalent "to a drinking water purification system."

In the meantime, the strange behavior of the officials at the economics ministry is also a matter of interest to the state attorney.

However, prosecutor Huebner told the nuclear committee in Bonn that he does not see a need to "initiate a preliminary investigation of the officials at this time." But because the telephone conversations surreptitiously tape-recorded by Ortmayer could be of "some help" to the NTG manager, he wants at least to "listen to them as

evidence." This is because the agency, when asked by Huebner in writing whether they had any information on NTG, answered that they did not know this firm.

Based on a letter written in May of this year, retired BAW man Welzien, in whom the state attorneys in Bielefeld are currently taking a particular interest, does indeed "remember very well" a "visit from Mr Ortmayer at the BAW." In a letter to one of the accused in the NTG affair offering his services as an advisor, the retired government director said he had been "involved in these cases" during his tenure and "as co-author and contributor to the German export list" was also familiar, "naturally, with the details" of that questionable section which the NTG business allegedly violated.

Welzien's letter is accompanied by a business card listing everything in which he feels competent, from nuclear engineering to "weapons and ammunition." Welzien also proclaims energetically that he would "gladly visit" the addressee should there be "any interest"—and, finally, this active retiree, who requested "confidential treatment" of his letter, claims that he is "still on the ball."

That appears, in fact, to be the case. As recently as last summer Welzien provided "tutoring" in export law to managers at Industriewerke Karlsruhe Augsburg (IWKA), for a fee, as he himself admits. The purpose of the meeting, recalls one participant, was to obtain a clearance certificate for a thorny export order: Schaefer Werkzeugmaschinen GmbH, a subsidiary of IWKA, wanted to deliver 15 lathes to Iraq. The intended buyer: Saad Baghdad, an organization under the supervision of the directorate for military products.

Welzien, again concerned with confidentiality, introduced himself at the meeting with the following words: "You can see me but I am not here." Then, however, he is said to have lectured simply as "an honest broker" on "the use" of the export list, and is said not to have discussed "any specific business."

According to a draft of the contract, the business was initially referred to as the sale of machines for making precision "parts for 155-mm grenades." Soon, however, only the manufacture of "out-of-round parts" was mentioned. The cosmetic linguistic change took place prior to Welzien's visit, however.

Norbert Gansel (SPD), deputy to the Bundestag and member of the submarine committee, maintains, however, that retiree Welzien provided the defense in the Kiel submarine affair with assistance regarding phrasing. Welzien is also no stranger to the legal proceedings against two former managers from Leybold Heraeus, who are accused of illegally supplying parts for a uranium centrifuge for Pakistan's bomb program—"very thoughtful" is what one defense attorney called him for

his appearance as an "expert consultant." Welzien is likely also striving for the same result in the criminal proceedings regarding the Gelnhausen tritium deal.

The heavy water cleaning system from NTG was not delivered during his tenure—the Pakistanis found it too expensive. Instead, one year later, the company delivered a much more dangerous device: a system for extracting and storing 60 grams of pure tritium (SPIEGEL 8/1989).

This system is intended "specifically for nuclear weapons production," report state attorneys in an internal report. The deal could have been prevented, it has recently been shown, if the officials had followed up on concrete information from the U.S. embassy in Bonn.

On 13 March 1986, a U.S. diplomat at the Foreign Office had provided an intelligence tip called a "nonpaper." According to this "nonpaper," a German firm wanted to export "a tritium extraction system" to Pakistan. The reaction of the economics ministry which received the report that same day: The Foreign Office was requested to please not use the "misleading term tritium extraction system."

"Under no circumstances," said the economics ministry, should NTG be mentioned to the Americans. Shortly before, Ortmayer had "expressly" requested in a telephone conversation that "the company be left out of any public discussion."

The Americans quickly found out on their own which company wanted to export the system. On 1 December 1986, they reported in concrete terms that "the German firm NTG" had made the Atomic Agency in Pakistan an offer "for installation of a tritium extraction system."

The Americans urgently requested that Bonn "take all possible steps" to ensure that such an export be prevented at all cost "until our two governments have an opportunity to discuss it."

Once again the Eschborn officials took little action—not so NTG: On 30 December one part of the so-called tritium treatment system headed for Pakistan by ship and a few days later the other part left as air freight.

The non-inspectors in Bonn and Eschborn very likely could have prevented many an inflammatory shipment to authoritarian regimes, areas of tension, or countries on the brink of nuclear capability—in many cases they were informed sufficiently early.

In July 1985, for example, the BAW and the economics ministry were aware of a report from the Moscow embassy in Bonn concerning unusual activities on the

part of Imhausen Chemie in Lahr in Baden-Wuerttemberg, in which the destinations Hong Kong and Libya are mentioned in addition to "a state-owned German company" (meaning Salzgitter AG)—critical keywords in the Rabita scandal.

However, the agency did not find the company in its files. And no one in Bonn or Eschborn thought to inform an investigative agency. So nothing happened at all.

"We are not a federal ministry for criminal investigation," protests ministry director Schomerus. A supervisory agency can not assume investigative tasks at the same time, he said. And even if it could: At the BAW—and this is where the agency's narrow-mindedness is becoming a lasting political scandal—there is obviously no inclination whatsoever to call in criminal investigators. In nearly all of the serious export cases, such as Rabita, Saad 16, or NTG, criminal investigations have been the result of revelations by the press, tips from third parties, or information from tax investigators, not of any action by the BAW or the economics ministry.

The economics officials want to have so little to do with the state attorneys that they had a legal expert opinion prepared to clarify basic principles when they became aware of the Howaldt shipyard blueprint deal in Kiel in 1985. Their problem: "If members of the Ministry of Economics, in their official capacity, become aware of matters where violation of the penal provisions of the Military Weapons Control Act is suspected, the question is whether an obligation exists to inform the relevant state attorney's office of the matter."

The agency's internal answer sounds like something from Radio Yerevan: There is "no general obligation" on the part of agencies "to file charges regarding criminal acts" as long as no "special legal ruling" exists. The Military Weapons Control Act recognizes "no special obligation to file charges." Therefore, "the decision in this regard is up to the discretion of the head of the agency," according to the in-house expert opinion. Charges were not filed.

The agency reacted with absolutely hair-raising inaction to information from the Americans who have intervened in the Pakistan case for more than 10 years now. As early as 1979, then-president Jimmy Carter expressed concern to his contemporary, Chancellor Helmut Schmidt. In 1987, former U.S. Secretary of State George Schultz also demanded in the strongest terms that his German counterpart Hans-Dietrich Genscher (FDP) "consider additional steps" for "preventing the spread of nuclear weapons." In dozens of cases, concrete information from the United States has landed on the desks of officials in Bonn.

"The demarches," said Richard Perle, former undersecretary at the U.S. Defense Department, sarcastically at the end of April, were likely viewed in Bonn as "demarch-mallows"; the German government "does not hear what we are saying."

Inquiries urged by the United States were again and again rejected by officials with the statement that the firms involved could "view this as unjustified interference with their business policy." And besides, there was no time for them. "I reject such work-creating measures in principle," says department head Spies. His BAW colleague, Welzien, also noted on internal correspondence that the tips from the United States "normally land in my waste basket."

The current practice—doubtful for the economy—is not likely to change much in the future.

The West German government did quickly pass amendments to foreign trade and military weapons control legislation after pressure from abroad increased as a result of Rabita and the tritium deal by NTG. But critics such as Gansel of the SPD consider the clauses, which will undergo a first reading in the Bundestag next week, to be a "bureaucratic reflex action" which "only increases red tape and not the actual controls in individual cases."

The "structural deficit in terms of enforcement" (according to Gansel) will also not be alleviated by establishing 170 additional positions and 3 new subdepartments at the BAW. As SPD politician Bachmaier also said sarcastically, "This is like hunting vultures with a butterfly net."

According to previously existing law, exporters could ship plans and manufacturing documents for the construction of chemical plants—even factories capable of producing poison gas weapons—over the border with impunity. Even the export of an associated control system required no permit—which is why it is questionable whether it can be proved that the head of Imhausen, Juergen Hippensiel, arrested in May, committed a crime.

Startled by the scandal over Qadhafi's poison gas factory, the government this spring formulated an executive order applying specifically to Rabita: Be it toilet seats, refrigerators or louver windows, according to the new law resulting from the Libya affair, everything destined for Rabita now requires a specific permit. Bonn, however, was unwilling to allow further application of this principle, which corresponds to American export law.

In the future, a general West German production ban on A, B, and C weapons in accordance with the Military Weapons Control Act will be in place; special permits, as were possible earlier, will be prohibited. "Support" for the production of such military equipment abroad by "supplying installation items," plans, and know-how, or by providing assembly work on site will also be liable to prosecution. In the case of violations, not only the company's owners but also the engineers will be held accountable.

The "act of support," however, is very narrowly defined in the draft law. Only "cases of negligence" will incur penalties. This means that a supplier, despite concrete indications that his product is being misused, believes all of the assurances to the contrary—something that is very difficult to prove.

The formulation of the law presents a basic problem. The difficulty with all attempts to limit the production of chemical weapons is that, as Schomerus says, "from a certain point on, all plants that produce antibiotics can also produce biological weapons." However, he also says, no one could "seriously believe that health care must no longer be provided in Iraq."

Therefore, the stipulations regarding so-called dual-use items, which have civilian as well as military uses, remain a loophole—particularly for exporting certain machine tools, testing equipment, and fittings.

The most interesting new development in the complicated conglomerate of ordinances and legal remedies, which do after all provide for substantially larger penalties, involves regulations regarding "expanded data exchanges" between government agencies. In the future, information from the different departments, from the BAW to the Federal Office of Criminal Investigation (BKA), from the customs administration to the Customs Criminal Activities Institute (ZKI), will be available in an electronic network. "We will," promises Schomerus, "produce something very fine, operatively speaking, in the next few years."

Critics believe, however, that the planned "computer profile system" (quote from Schomerus) is not entirely without problems in terms of data protection laws. The BKA, which does not want the information exchange to be a one-way street, is demanding in turn that it have access to the BAW's information—unblemished firms could therefore end up in the police computer for no apparent reason.

Above all, however, increased exchanges of data and stricter laws will not do much good as long as BAW officials and their superiors in the economics ministry in Bonn are solely responsible for deciding what requires a permit and what does not. No court will declare an export illegal which the BAW has "rubber-stamped," i.e., found exempt from export permit requirements.

When the Regional Finance Directorate (OFD) in Kiel in 1987 had to check out "suspicion of unauthorized export of submarine manufacturing systems to the Republic of South Africa," for example, there was a huge political scandal. However, the criminal investigation was quickly halted—as usual the BAW was able to find no violation of the export list.

At the request of the OFD, the experts in Eschborn promptly got to work. First they asked if it would be possible to "inspect a submarine" in Kiel. The requested

expert opinion, they admitted to their colleagues in Kiel, would be, so to speak, "a pioneering effort"—they had "not yet had any experience with submarines in this form."

Several months after the inspection of the submarine, the BAW officials were so well informed that they were able to maintain forcefully that "only an experienced submarine manufacturer" would be able to make any use of the documents which by that time had been spirited out of West Germany under strict secrecy in diplomatic pouches. And besides, the blueprints were not particularly suited to military purposes—"basically" they corresponded to design drawings for a "civilian submarine not requiring an export permit."

From this information, their colleagues at the OFD in Kiel concluded that at most "a kind of cigar could be assembled" which just happened to be "waterproof"—a Havanna deluxe, so to speak. At any rate, the regime in South Africa paid 45 million marks for the documents.

**Further Charges Made Against Export Office**  
51003009 Hamburg *DER SPIEGEL* in German  
19 June 89 pp 83-85

[Unattributed article: "With Dispassion Against the Chaos"]

[Text] At the Cafe Prinzess in Regensburg in mid-April an older gentleman took Minister for Economic Affairs Helmut Haussmann aside: He wanted to give the liberal a "piece of good advice."

"Totally in confidence" the businessman recommended to the minister that he should pay attention as quickly as possible to the Federal Office for Trade and Industry (BAW) in Eschborn. Something was "rotten" there, he could prove it. Haussmann promised to let him know forthwith. But the business executive heard nothing from him after that.

Haussmann did not move until last week: Hurriedly, he had his officials assemble, seek out memoranda, and prepare ministerial submissions. After the SPIEGEL report (24/1989) on "West Germany's Most Peculiar Public Authority," which is embroiled in multiple scandals involving arms exports to areas of tension and illegal exports of nuclear material, Haussmann quickly needed arguments in order to explain his inactivity.

On Wednesday the minister admitted in the Bundestag that "new accusations" had frequently been brought against the office, which in fact is supposed to examine the legality of Federal German exports. According to Haussmann, he takes it all "very seriously." The minister has now realized "that the federal agency needs an organizational reform." Such a reform is already being prepared, but it is "very difficult to find qualified chemists and physicists for these inspection jobs."

The economics minister had to endure heavy attacks from the opposition. "Obviously," he is "not in a position" to assure effective control, SPD [Social Democratic Party of Germany] Bundestag delegate Bernd Reuter reproached him. The policy of "silent encouragement" of controversial export activities "even of an illegal nature," SPD disarmament expert Albrecht Mueller said adding his support, has caused "major foreign policy damage." According to Greens delegate Otto Schily, it has been "proven that the Federal Government is not capable of monitoring adherence to the Nuclear Nonproliferation Treaty."

Even this week Haussmann will "account for his actions" (Reuter) to the Nuclear Investigative Committee in Bonn, which has been inquiring into controversial nuclear exports for more than a year. As early as last Thursday the delegates asked Haussmann's division head for foreign trade policy, Lorenz Schomerus, 55, for details from the SPIEGEL report. The head of the ministry department repeatedly had to talk his way out of it with roundabout explanations—he obviously countered the "chaos in his agency" with "personified disposition," Schily commented.

Even in the Christian-Liberal coalition, doubts are multiplying as to whether, as CDU [Christian Democratic Union] Bundestag delegate Klaus Harries still cautiously puts it, the "very liberal practice since the 1970's of granting export permits" is suitable for "preventing military use of nuclear energy." FPD [Free Democratic Party] politician Burkhard Hirsch is under "the impression that the FRG is losing its international reputation." On Wednesday the Bonn cabinet quickly decided to expand the legislative drafts for arms control, to be discussed at the end of this week in parliament, by a passage making it punishable to participate in building missiles abroad as well.

The Social Democrats have also written improvements into their proposal for a "reduction of arms exports," which is to be brought into the deliberations. SPD delegates on the nuclear committee had stated on Monday of last week that the deplorable state of affairs which has been uncovered makes new discussions necessary.

As long as the BAW remains a "general store," responsible for both export control and promotion of the economy, "the agency cannot be reformed," committee chairman Hermann Bachmaier (SDP) stated. He referred to a two-page paper that circulated at the meeting. In it parliamentary group member Holger Koppe had suggested the "creation of an independent export control authority, which is not subordinate to the Federal Ministry for Economic Affairs."

Haussmann's department, the jurist argued, feels "primarily obligated to the interests of export-oriented business. In case of doubt," it therefore does not decide "against an export deal, but in favor."

Nuclear control is particularly poorly taken care of: The ministry "never acts as an agent for the Nuclear Nonproliferation Treaty," but sees to it that the implementation of this and other international agreements "is, on the contrary, delayed." A new office should therefore be established under the federal finance minister, who, in terms of the objective, is familiar "with control duties."

The majority of the disarmament experts did not want to espouse the demand for another agency—it is possible, as for example Social Democrat Norbert Gansel objected, that "only more bureaucracy" would be created. Instead, they now demand the installation of a "representative for military weapons control" in the Bundestag.

At the same time monitoring officials, unlike up to now, would be obligated to report as soon as they found out about potentially criminal activities. Even if export controllers would not go after explosive individual cases themselves, it should at least guarantee that investigators are brought in.

DER SPIEGEL had reported that when the economics officials in Bonn found out about the secret export of submarine construction blueprints to South Africa in 1985, they first had an expert legal opinion written "as to whether they had an obligation to share these circumstances with the responsible district attorney's office."

The internal agency reply turned out as if on Radio Eriwan: In principle yes, but not necessarily. A report was not made at that time.

With lax controls, fixed inspections, and an extraordinarily generous interpretation of the Bonn export regulations, the Eschborn officials, usually in close collaboration with their superiors at the Bonn Ministry of Economics, had

- failed to prevent the illegal export of a plant for reprocessing the bomb material tritium to Pakistan, although the U. S. embassy in Bonn had made them aware of the imminent export in early December 1986;
- allowed the export of equipment and materials needed for building nuclear bombs and missiles, such as special computers and heavy water, test instruments, and precision parts, to Argentina, India, Pakistan, and South Africa;
- declared German deliveries from the Gildemeister machine tool manufacturer in Bielefeld for the Iraqi missile project Saad 16, such as test stands and control facilities, to be non-objectionable largely by means of so-called negative certification (official jargon "NB").

Therefore, not only the Gildemeister company itself, but the BAW as well came to the attention of the district attorneys. Three officials from the agency, who were involved in the affair at the time, were questioned as

witnesses in April. On 17 May in Kronberg in Taunus BAW employee Guenter Welzien, 67, now retired, had his house searched—department head Schomerus, responsible for the BAW in the Bonn Ministry of Economic Affairs, first found out about it “from DER SPIEGEL,” as he admitted to the Nuclear Committee.

At the beginning of last week Welzien was again asked to testify, and with him three additional officials from the federal office in Eschborn. This time, however, the summons did not come from Bielefeld, the seat of the Gildemeister company, but was postmarked Hanau.

District attorneys Albert Farwick and Reinhard Huebner, who are investigating the Gelnhausen firm of Neue Technologien GmbH (NTG) because of the tritium business, had, after studying letters and conversation protocols, spotted “slight assistance” (Huebner) by the Eschborn officials for Rudolph Maximilian Ortmayer, 52, the former head of NTG, and today the accused.

The BAW officials must now explain their peculiar behavior to the investigators. They had conducted “understanding conversations” (Huebner) in all kinds of telephone calls with the NTG chief and behaved extremely cooperatively. The Eschborn people visited the company and chatted over sherry; an internal draft letter from the office landed on Ortmayer’s desk.

Apparently, the government officials had “searched for ways,” as criminal prosecutor Huebner reported in the Nuclear Committee, “as to how certain difficulties could be circumvented.” At this time, however, he did not see “that investigation proceedings could be initiated against the officials—at least not at the present time.”

The Bielefeld people thought otherwise. They have meanwhile begun a formal investigation of retired Government Executive Welzien—“for bribery and assisting a misdemeanor according to Section 34 of the Foreign Trade Law” (file number 9 Gs 1028/89).

The retiree had 6 years ago, while still in office, issued the first declaration of non-objection for Gildemeister’s missile deal with Iraq. Subsequently, the “NB’s,” which have a 1-year validity, were simply copied from the Welzien form—the last one as late as June 1988. The office did not recall it until 9 April 1989, although the Federal Government had pledged nonproliferation of missile transporter technology in an international agreement as early as 1987.

The criminal prosecutors today find the circumstances under which the crucial first permit had been given extremely strange. They harbor the suspicion that “the accused” may have been “prevailed upon to issue the permit through the promise or granting of favors.”

On 3 June 1983 three managers at Gildemeister visited BAW employee Welzien and afterwards invited him to the Ratsschenke restaurant in Eschborn. After a meal paid for by the company, the company representatives departed—with the non-objection declaration for Saad 16 in the briefcase.

The paper had apparently, at least in the opinion of the criminal prosecutors, been issued at random—without any kind of examination. For it was not until 5 days later that the Gildemeister people asked BAW president Hans Rummer, 58, if he would allow his colleague Welzien to travel to the Oberpfaffenhofen Air and Space Center; only “in this manner” was it possible to make “a judgement” of the Saad 16 project. The fact that the permit had long since been issued, did not attract attention at the agency.

Not until these last few weeks, 6 years after the alleged violation of duty at the office, did the BAW chief bar retiree Welzien from the office in Eschborn. He has not so far initiated disciplinary proceedings.

According to Schomerus, as a retired person Welzien also may not use his “professional knowledge” to advise companies—especially not if he shows them tricks as to how the export regulations can be circumvented. In the meantime, BAW spokesman Norbert Goworr reported last week, Rummer has reminded the pensioner of this in a written admonition.

But Welzien insists he has not received a letter from the president. “Just be careful,” Rummer only told him a few months ago about his private advisory activity, “so that we don’t get negative publicity in the headlines.” And so the retired government executive “kept at it” (Welzien) and held, as he calls them, “dialogues” on export law, even with arms exporters.

Trips to Cologne, Karlsruhe or Kiel—his appointment calendar is packed full of engagements. Whether at arms manufacturer Messerschmitt-Boelkow-Blohm in Munich, at nuclear exporter Leybold Heraeus in Hanau, or Gildemeister in Bielefeld: Welzien is well known by company representatives everywhere.

Sometimes he is also helped out in an emergency situation. Last year when the retiree had lost his wallet on a trip to the Rhineland, without hesitation he called the Cologne annex of Leybold Heraeus. He promptly received DM 200 in cash for the trip home.

He did not have to repay the money. Says Welzien: “It was an advance on my honorarium.”

**Haussmann Admits Failures of Export Control**  
AU2206120989 Cologne Deutschlandfunk Network  
in German 1100 GMT 22 Jun 89

[Text] Federal Economics Minister Haussmann has admitted to serious export control failures of the Federal Economics Office. Haussmann told the Bundestag

Nuclear Investigation Committee in Bonn today [22 June] that at the Eschborn-based agency which is under his jurisdiction the awareness of dangers was insufficient, and granting export permits had become the rule. In addition, the agency had failed to deter the black sheep among exporters by imposing punishments and fines, he said. In addition, the substantial personnel shortage of the Federal Economics Office must be remedied, Haussmann said.

The economics minister called upon the large enterprises in the Federal Republic to organize control systems of their own. In addition, foreign intelligence reports on possible illegal exports of dangerous material from the Federal Republic should in the future be adequately assessed, Haussmann added.

**Minister Wants To Stiffen Export Controls**  
51003010 Hamburg DER SPIEGEL in German  
26 Jun 89 pp 87-89

[Unattributed article: "In the Aisles"; first paragraph is DER SPIEGEL introduction]

[Text] The Federal Government intends to put an end to lax export controls for weapons and nuclear equipment.

The two young Pakistanis at the Karlsruhe Nuclear Research Center were extremely curious. By persistent questioning Abdul Majeed and Naeem Ahmed Javed acquired technical details about the "hot cells" at the Karlsruhe nuclear facility where highly radioactive materials are handled.

Back in December 1974 Karlsruhe nuclear researchers happily provided information about their holy of holies. They even worked out plans for how their foreign colleagues could construct a similar laboratory themselves back home in Pakistan.

The discussion was successful: the "New Labs," a reprocessing facility at the Pakistan Institute of Nuclear Science and Technology (Pinstech) near Rawalpindi has been operating for some time. Experts estimate it is capable of producing up to 20 kilograms of plutonium, a material used in atomic bombs, annually.

The two Pakistanis have advanced professionally as well. As directors of the nuclear organizations in Islamabad and Rawalpindi, they and other top managers have continued to cultivate their good relations with Germany: with firms like Neue Technologien GmbH (NTG) in Gelnhausen, for instance, from which they acquired valuable parts for their bomb program (see box, page 88 [not translated])—sometimes legally and sometimes illegally. They maintained their ties with the center in Karlsruhe as well.

In mid-June, however, officials in Karlsruhe abruptly put an end to the Pakistani connection—on orders from above: Federal Research Minister Heinz Riesenhuber

(CDU) [Christian Democratic Union] suddenly became concerned that he too could get in trouble over nuclear exports and possible violations of the nuclear nonproliferation treaty. He instructed the Nuclear Research Center to terminate the "Agreement on Cooperation in the Area of the Peaceful Use of Nuclear Energy" signed in 1974 with the Pakistan Atomic Energy Commission.

Of course the center had always given assurances that "sensitive areas" were excluded from the German-Pakistani cooperation, which mainly went through Pinstech. Nonetheless, Riesenhuber is concerned over new reports about Pinstech scientists' work on a bomb and is unwilling to take any more risks.

In addition, ministry officials argued, the planned tightening up of export controls under the foreign trade law discussed last Friday in the Bundestag alters the situation: in the future, involvement by scientists in know-how transfers could be a punishable act.

Currently cooperation agreements with foreign institutes are being examined very carefully. At the same time, the ministry issued a circular last month warning scientists to pay "particular attention" to "protecting sensitive knowledge and technologies."

Changes are also underway at the Federal Economics Ministry, which has been frightened by reports about lax controls on the part of the Federal Office for Trade and Industry (BAW) in Eschborn. As late as early June, when he breakfasted with the U.S. Secretary of Commerce in Bonn, Economics Minister Helmut Haussmann (FDP) [Free Democratic Party] was playing down the BAW's inadequate controls. He said that amendments to the foreign trade laws would soon fill the holes in export controls, which have regularly permitted the export of nuclear technology and material that can be used in weapons.

Now the minister has realized that there is "something rotten" (Haussmann) in the bureaucracy as well. He informed the Bundestag that there would be a "thoroughgoing reform of export controls." After published reports about Germany's strangest agency, Haussmann said that the BAW had made grave errors.

Thus, BAW President Hans Rummer (58) and his associates were "not sensitive enough" about touchy export applications. Officials had "made approval too much the rule and rejection too much the exception;" a "dilemma," Haussmann said, that had developed "over many, many years."

The minister knows that he cannot repair the deficiency so quickly. Achieving effective export controls is "extremely complicated," he acknowledged. First of all, the BAW export control staff is to triple in size by the end of next year. In addition, however, the minister says that the controllers will need "a different mentality." The "new thinking" will "take time," however.

For that reason Haussmann has begun by setting up a "coordination group" in his ministry; this is to inform him of all sensitive applications and control the BAW controllers. In the past, Haussmann admitted, even highly sensitive export applications had often been decided on at the desk officer level. At most, the state secretary had been involved but not the minister.

Thus Haussmann only found out about some of the "highly unsatisfactory happenings" in his ministry "from DER SPIEGEL":

- For instance, the suspicions of bribery against Guenter Welzien, a former senior BAW official, who issued the permit for German sales to the Iraqi Saad 16 missile project—possibly influenced by "the promise or delivery of personal advantage," as public prosecutors in Bielefeld suspect today; or
- New details about an NTG deal with Pakistan; officials did not block the illegal export to Pakistan of a facility for the recovery of tritium (used in nuclear bombs), even though they had been given adequate warning about the deal by the U.S. embassy in Bonn.

Research Minister Riesenhuber, like Haussmann summoned before the Bundestag Nuclear Committee last week, also had to admit to gaps in his knowledge. Even though NTG export plans had come up in his ministry in the spring of 1985, he only learned the details by reading DER SPIEGEL. Bundestag Member Otto Schily (Greens) thereupon remarked drily that DER SPIEGEL appears to be "the most important source of information for Bonn ministers about what is going on in their own ministry."

Now Haussmann wants to impose "new administrative structures" on the BAW as quickly as possible. Presumably BAW boss Rummer will be the first one hit. Last week the economics minister uttered the cautious formulation that he reserved "final judgement as to the qualifications of the management."

SPD [Social Democratic Party of Germany] man Rummer had been discredited with his own party as well as the coalition parties as early as last year when he hemmed and hawed before the Nuclear Committee and showed himself not particularly well informed on the subject of export controls.

"Dr Rummer is a card," the TAGESZEITUNG commented at the time. Members of the Bundestag in Bonn still remember Rummer's stand-up comedian performance. Free Democrat Ulrich Irmer: "We were rolling in the aisles with laughter."

#### **DER SPIEGEL Reports on Rheineisen Export Scandal**

*AU0307105789 Hamburg DER SPIEGEL in German  
3 Jul 89 pp 57-58*

[Unattributed report: "Wrong Use"]

[Text] The foreign minister was fed up. Every few months, Hans Dietrich Genscher complained last week, the Americans "confront" the FRG Government "with

the criminal activities of some companies" and this is then "even brought to the attention of highest level of government."

Genscher felt personally exposed. Only 6 months after the U.S. Administration published the Libyan poison-gas connection of German entrepreneurs, it has again exposed the FRG as the Eldorado of shady businessmen.

Washington reportedly has information that German enterprises are involved "in advising Iran concerning the delivery of primary products for the manufacture of chemical weapons," U.S. Secretary of State James Baker told his Bonn colleague Genscher in Washington the week before last. The connection that was discovered by the U.S. intelligence service leads to Rheineisen Chemical Products in Duesseldorf.

Genscher had hardly been briefed and a telex just sent by the German Embassy in Washington to the Foreign Ministry, when the people in Bonn were reading the most important details in THE NEW YORK TIMES—exactly as happened in January when the scandal around the Libyan poison-gas plant in Al-Rabitah broke.

Foreign Minister Genscher is not the only one among the Bonn leadership who is outraged about having again been duped by the Americans. In the Chancellor's Office the actions of the Americans were called "impossible": "This is a good instrument to fan anti-Americanism in our country," one of Kohl's advisers said.

Warned by the Al-Rabitah affair, when the FRG Government misled the public with disinformation for weeks, acted with great restraint against the poison dealers of Imhausen Chemie, and then had to face very harsh and embarrassing questions in the Bundestag, Bonn reacted quickly this time, without waiting too long for information that "would hold up in court."

On Wednesday [28 June] the Duesseldorf public prosecutor started investigations against the managers of Rheineisen Chemical Products for violating the Foreign Trade Law. A purchasing contract, which was concluded on 1 June 1989 and was found by police during a search of the Rheineisen offices, confirmed the accusations of the Americans: For \$269,436 the company intended to ship 257 tonnes of thionyl chloride, a primary product for the manufacture of the neural agent mustard gas, which was produced in India, to Iran.

At the last moment, Bonn tried to use all diplomatic means to prevent the delivery of the hot goods: The first part of the shipment, which was taken from Bombay to Dubayy by the German container ship "Seacrest Pioneer," should not reach Bandar Abbas, its port of destination, under any circumstances.

The German investigators quickly realized who was to receive the poison-gas chemicals. "Even though it is not the client," an internal note of the Bonn Finance Ministry says, "the Iranian Defense Ministry is involved in the deal."

The Rheineisen files show that the Iranian military was up to bigger things: When the Duesseldorf office of the Iranian state-owned "Defense Industries Organization" (D.I.O.) company established contact with Rheineisen at the beginning of 1989, it offered a deal for millions of Deutsche marks. The Iranians said that they need 3,400 tonnes of thionyl chloride—more than 10 times as much as the delivery that has now been stopped.

Over the past years the D.I.O. Contact Office, the procurement office of the Iranian military, has made Duesseldorf the turntable of armament deals. Thus, the D.I.O. office had contacts with the Chemco export company, which has meanwhile been disbanded and whose deals have been investigated by a U.S. court in Baltimore for months. The matter under investigation is thiodiglycol, which is also a raw material for the production of mustard gas.

When the deal was revealed in spring 1988, Peter Walaschek, a German merchant, had ordered 90 tonnes of this substance in Baltimore. His dubious business partner was Sajjid Karim 'Ali Sobhani, attache of the Iranian Embassy in Bonn. Even though the Foreign Ministry gives assurances that there is "no direct connection" with the Rheineisen case, last week the FRG Government declared Sobhani *persona non grata*.

There are more and more indications that Iran, which was bombed with chemical weapons by its opponent Iraq during the 8-year Gulf war, is building up its own arsenal of chemical weapons—and, like Iraq, uses German aid to do this.

At the beginning of 1988, a Frankfurt installation construction company, Lurgi, was suspected of helping the mullahs. Iran had placed an order with the Germans to plan a factory for insecticides. Fearing that the factory might be used to produce chemical weapons, as the Libyan plant in Al-Rabitah was used, all European construction companies contacted shied away from the \$200-million order and Tehran had to shelve the project.

With the thionyl chloride deal, which has now been discovered, the Iranians followed the simpler route and contacted a compatriot, 38-year-old Moytaba Aschtari [spelling as published]. "Contrary to the registration in the trade register," the Duesseldorf Customs Office says, Aschtari is acting as manager at Rheineisen Chemical Products.

And contrary to his claims not to know anything about chemicals, the Iranian is not new to this business. Formerly a trade representative for German chemical

companies in Iran, since the mid-1980's he has been involved in a number of small FRG companies which have been under investigation by public prosecutors because of dubious deals.

Thus, he headed Cestquill Limited, a small company in Oberursel. According to investigators, the company, which went bankrupt last spring, exported the highly toxic substance cyanide of potassium from Romania under strange conditions—an accusation that is denied by the Iranian. Aschtari had also long been a shareholder of the Oberursel Omtea company, which mainly dealt with the export of sensitive substances—such as pesticides, agrochemicals, and primary products of the chemical industry—before it went bankrupt in 1987. The Frankfurt public prosecutor is investigating Aschtari, who left Omtea in 1986, for fraudulent bankruptcy.

Omtea, on the other hand, is linked with D.A. Dampf Trading Limited, a company which has its seat in Schmitten near Oberursel and which became conspicuous in February 1988: At that time, Netherlands customs officials confiscated a shipment of 289 pounds of ammonium perchlorate, a basic substance for the production of rocket fuel, in Rotterdam port on an Iranian ship. Belgian customs officials had already noticed the Schmitten company the year before when it wanted to export the same substance.

When at the beginning of 1989 Aschtari started to look around for large amounts of thionyl chloride for the Iranian deal, the clever chemicals dealer knew where to find them: This chemical substance is produced only in the United States, Japan, Switzerland, India, and the FRG—about 100,000 tonnes all over the world per year. Aschtari failed at least twice: at a Swiss company and the Leverkusen Bayer Company, where the Iranian wanted to buy 1,000 tonnes. The Swiss wrote Aschtari that they have to be sure that the substance would "not be put to the wrong use." In India Rheineisen found what it wanted—at the Ranspek Industries Ltd in Bombay.

As of 12 April negotiating a deal for thionyl chloride in the FRG must be approved by the Eschborn Federal Economic Office; the reason for this was the Libyan affair. However, if Aschtari had not bought the thionyl chloride himself but only negotiated the deal like a broker, nothing would have happened—such deals need no permit. This mistake might cost the Iranian a term in prison of up to 3 years.

Even the new foreign trade law, which is designed to mend the foreign policy damage caused by the Al-Rabitah affair and was read for the first time and discussed in the Bundestag the week before last, does not envisage sanctions against deals arranged by brokers.

Last Wednesday, the Bonn Cabinet hastily ordered Minister of the Chancellor Rudolf Seiters to examine the amendment to the law with the responsible state secretaries. "In the future, we will also discover and punish

such cases and keep them away from the FRG as a deterrent," Economics Minister Helmut Haussmann said, referring to Rheineisen.

The strong words were probably directed mainly at the United States: At the beginning of last week, the Bush administration let its friends in Bonn know—via THE NEW YORK TIMES, of course—that the United States considers the Rheineisen case as an "important test" of the Germans' willingness to "deter" their companies from deals with atomic, bacteriological, and chemical weapons with the Third World.

## FINLAND

### Holkeri: Decision on Nuclear Energy Faces Country

51002428a Helsinki HELSINGIN SANOMAT  
in Finnish 17 May 89 p 32

[Text] According to Prime Minister Harri Holkeri, Finns in the next decade will have to choose either to build more nuclear power stations or to delimit both development and consumption.

Having to make a decision to build the Vuotos and Kollaja Reservoirs is also only a matter of time. "Not building them amounts to wastefulness," Holkeri says.

Prime Minister Holkeri, who was a guest speaker at the recent 60-year-anniversary celebration of the Imatra Power Station, declares himself to be a supporter of nuclear power. However, the fifth nuclear power station will not be built by the government currently in power, according to Holkeri. This has in fact been specifically stated in the government program. Holkeri will not agree to state whether planning of the fifth nuclear power station has already been started or whether it is possible to start the planning during the tenure of the current government without violating the specific mention against building it that was included in the government program.

"Given that our society will in any case be needing more and more energy, we have to go back to considering those sources of energy that do not contribute to creating carbon dioxide or to strengthening the greenhouse effect," Holkeri explains.

Peat and coal are not on the top of Holkeri's list of energy alternatives, mainly for environmental reasons. "Maybe we could protect our peat bogs instead of burning them up," Holkeri suggests.

There is no way left to stop the construction of the coal-run power plant at Pori, according to Prime Minister Holkeri. "The main plans and related operations have already taken the enterprise beyond reconsideration."

The Pori coal power plant is now waiting for Parliament to exempt it from the sales tax. If the decision is made before the summer vacation, as promised, construction will start after one year.

A nonpolluting energy form that is not guilty of contributing to the greenhouse effect and the production of carbon dioxide is hydraulic energy, says Holkeri. He does admit that it will not be possible to increase hydraulic energy production in Finland very much any longer. At present, about one-fifth of national electricity production is accounted for by hydraulic power.

"Our rapids certainly have other value besides that in power production, and that is why they are so widely protected." In the prime minister's opinion, added power could come from some of the waterways that already are partly harnessed. "Further construction of waterways that are now in partial use comes up frequently in the form of isolated projects." Local opinions regarding these projects are mixed.

As the foremost projects, the prime minister names the Vuotos Reservoir at the headwaters of Kemijoki and the Kollaja Reservoir at the headwaters of Iijoki. "Regarding these, I must harshly predict that the debates pro and con, as well as the uncertainty of the populace, will cease only after the reservoirs are finally built," Holkeri says. In his opinion, the decision to build these reservoirs is only a matter of time.

Apart from energy economy, the prime minister sees these construction projects as an aid to areas that now suffer from constant flooding. "Experts say that the Iijokians will get rid of their floods as soon as the Kollaja Reservoir is built."

Holkeri did not want to discuss other partially harnessed waterways. As far as he is concerned, attention to the Kymijoki River and others may or may not be brought to bear in due time.

### Shipment of Spent Fuel to USSR Planned

51002428b Helsinki HELSINGIN SANOMAT  
in Finnish 20 May 89 p 19

[Text] Imatran Voima will ship 25 tons of spent nuclear fuel from the Loviisa nuclear power plant by train to the Soviet Union during the last weekend in May. The spent nuclear fuel is very strongly radioactive.

For security reasons, the precise time of the shipment will not be revealed. The final destination of the fuel will remain a secret, at the Soviet Union's request.

The spent fuel is being loaded in transfer containers in Loviisa at this very moment. It will be transported as a special shipment under heavy guard and with a police escort. In Finland, nuclear fuels are under the control of the internationally based atomic energy organization, IAEA.

The train, which will embark sometime next week, is the eighth nuclear fuel transfer from Finland to the Soviet Union. The first transfer was made in 1981.

The train, which included seven fuel transport carriages, arrived in Loviisa late on 17 May. The actual transport containers were brought inside the Loviisa power plant, where they were checked before loading.

By 19 May, two of these containers had been filled. The transportation will not start until the pressures and temperatures of the containers have stabilized.

## FRANCE

### Nuclear Energy Decline Cutting FRAMATOME Profits

51002429 Paris *LE MONDE* in French 17 Jun 89 p 30

[Excerpts] For FRAMATOME, the French builder of nuclear generators, the wilderness years have already begun. After demonstrating remarkable stability up to last year, the FRAMATOME group's net income is expected to drop by a third (31 percent) this year, falling from 1.06 billion to 732 million francs, and its cash flow will contract by 15 percent, from 2.3 billion to 1.9 billion francs, despite an 80-percent increase in business volume (19.6 billion francs).

Declining profits are first of all a reflection of slowing nuclear energy programs in France and abroad, as the group's president, Mr Jean-Claude Leny, explained on Thursday 15 June when he announced these figures. In 1988, FRAMATOME invoiced four "conventional" generating units (three in France and one abroad). In 1989, it will deliver only two reactors of the pressurized water type (one in France and the other overseas). This year, it will also invoice for the Superphenix breeder reactor—a bad deal for the company which will make no profit on this giant construction project, due to the additional time needed to perfect the prototype, as well as cost overruns and "technical glitches" experienced in starting up (the failure of the cylinder, in particular, will not benefit this large builder in the least). "Superphenix will bring our profits and our cash flow capacity down," Mr Leny acknowledged, adding that the company will emerge with "the least amount of damage" in that it managed "not to lose money on it."

### Costly Diversification

Beyond the slowdown in nuclear activities (still 59 percent of business volume and expected to account for less than half the company's work plan after 1994), FRAMATOME's performance is also suffering from poor profits in its diversified endeavors such as computer networking, information technology and mechanics. These very recent ventures, which the group undertook to supplement its nuclear energy work, will need much effort before reaching a level of profitability comparable to the company's traditional vocations. Burndy

and Souriau, acquired by the group last year, were experiencing difficulties, Mr Leny acknowledged, "which is why we were able to buy them for little." But considerable effort to invest and rationalize are now required in order to "revitalize" the companies and bring the effect of synergy into play.

While remaining confident in the ultimate outcome of the group's efforts to diversify (the only possible survival tactic, since "a company cannot be kept alive amid decline"), Mr Leny stressed that FRAMATOME wishes to stay in the nuclear field. "There is no question of abandoning nuclear energy. We will keep up our skills," he said, outlining the group's strategy of alliances with various foreign partners. [passage omitted]

For the time being, nonetheless, the prospects of the international market continue to look weak. The only contracts to build nuclear reactors now under discussion involve China, India and, in a more distant future, the USSR. "Nuclear energy is on the decline in France, in Europe, and the world," Mr Leny explained. "We will have to wait 5 years, maybe 10. Lamenting the situation will not help. (...) We must develop new endeavors. It is a big gamble that people of my age have to take."

## IRELAND

### Irish EC Presidency To Campaign for Nuclear Safety

51500140 Dublin *IRISH INDEPENDENT* in English 20 Apr 89 p 10

[Article by Tom Reddy in Brussels: "Nuclear Safety To Be Given Top EC Priority"]

[Text] A stepped-up campaign for the closure, or at least EC monitoring, of Sellafield will be a Government priority when it takes over the Presidency of the EC.

The Government's intention was spelt out here last night by Energy Minister Michael Smith when he met Energy and Environment Commissioners Ripa di Meana and Cadhose de Cunha.

Ireland takes over the Presidency of the Community for the first time in almost five years next summer, and yesterday's talks were the first held by a Government Minister in a bid to set the six months agenda.

Nuclear Safety Commissioner Ripa di Meana said that the Commission would "examine" the possibility of establishing a monitoring service to check Sellafield and other nuclear installations.

Under the Euratom Treaty, the EC "appeared to have the power" to establish a monitoring force to check nuclear facilities like Sellafield, an official EC spokesman said last night.

Lorna Reid writes: Declaring the Irish Sea a nuclear free zone would be a very empty gesture because of the present international maritime laws, Taoiseach Charles Haughey said yesterday.

Mr. Haughey who was replying to Foreign Affairs questions in the Dail on behalf of the Tanaiste, Mr. Lenihan who is in hospital, said that everyone was deeply concerned at the general situation of nuclear submarines transiting our waters.

We had to do everything we could, and appeal to the nations concerned to take care particularly in relation to civilian shipping but these submarines were only exercising their rights under international law.

Labour's Michael D. Higgins who suggested that the Irish Sea be declared a nuclear free zone said there had been 38 deaths since 1981, and nobody had claimed responsibility.

## UNITED KINGDOM

**Rapid Move From Coal to Nuclear Power Urged**  
51500138 London *THE DAILY TELEGRAPH* in English 28 Apr 89 p 18

[Editorial: "Nuclear Challenge"]

[Text] One clear message from Wednesday's Downing Street seminar on the damage being done to our atmosphere is that we should move more rapidly from coal to nuclear power. A "wait-and-see" policy has been ruled out. To counter the greenhouse effect, there will have to be a long march towards energy conservation. In the short term, there ought to be a substitution of gas for oil and coal as a means of generating electricity. In the longer term, a shift from fossil fuels to nuclear power seems unavoidable. That confronts the Government with a formidable public relations exercise. By contrast with France, where nuclear power is politically uncontroversial and has become, therefore, a principal source of energy, nuclear power in this country arouses powerful emotions.

The earliest nuclear power stations in this country were built deliberately well away from centres of population. This policy impressed official doubts at that time as to just how safe nuclear power stations were on the public mind, where they have remained. The Chernobyl disaster reinforced them. Chernobyl was an accident, yet it did more harm to this country's energy policies than the Soviet Union could have contrived. The World Health Organisation has estimated that Chernobyl may cause around 1,600 premature deaths over the next 30 years. That is more readily remembered than other, looser estimates of 1,700 deaths a year in Britain arising from coal pollution.

In short, the message that atomic power is cleaner and safer than coal will be extraordinarily difficult to get across to the public. It will create a political battleground. The response of Mr Paddy Ashdown, the Democrat leader, to the No 10 seminar was to attack Mrs Thatcher for "nuclear mania" and promise to halt production from Britain's nuclear power stations by the year 2020. Absurd though this undertaking may appear, it will have a strong political appeal. Labour's response is also safely negative: the Shadow Environment Secretary, Dr John Cunningham, thinks a major energy conservation programme can effectively tackle atmospheric discharges. A hard decision now lies with this Government. It has been pointed in an unpopular direction. There is still scepticism—which we do not share—about the Prime Minister's conversion to "green" policies. The test may well prove to be nuclear power. If it is the right course, are Ministers ready to campaign to persuade an unwilling public that this is so?

**Sellafield Plant Receives Environmental Citation**  
51500137 Belfast *NEWS LETTER* in English  
30 Apr 89 p 8

[Article by Joe Gorrod]

[Text] A 'Clean Seas' award for a nuclear plant has made green campaigners cross.

The award, backed by the government and big business, honours Sellafield for its role in promoting a better environment.

## Gangsters

The nuclear laundry, accused of turning the Irish Sea into a poisoned pool, gets a citation from the Environment Foundation, the DoE and Shell (UK) for its role in promoting pollution abatement technology.

Greenpeace nuclear watchdog Philip Cade said: "It's a sick joke.

"The only reason those gangsters deserve a medal is for killing fewer people than they did last year." The ion exchange effluent treatment plant that won them the award is the showpiece of tourist trips around Sellafield.

## Charade

Said Mr Cade: "They could have had that equipment in years ago, but wouldn't spend the money before the outcry by environment groups forced them into it.

"Even now they are reducing atrocious pollution levels to something less. The award of a prize for reducing discharges to such an inept organisation is a piece of total deception."

South Down MP Eddie McGrady fumed: "This is a total charade. The Irish Sea is one of the most radioactive stretches of water in the world and Sellafield has been polluting it for 40 years.

"Ships from all over the world go there to dump their nuclear waste for disposal. They would have earned a medal for being the worst and most sustained polluters of the Irish Sea."

The 4-year-old filtering equipment at Sellafield cost British Nuclear Fuels £145 million and cleans 99 per cent of radioactive contamination out of water pumped into the Irish Sea, they claim.

#### Proud

The water is screened through beds of volcanic ash imported from California in an effluent treatment plant known as Sixep, and, claims BNF, only 99 per cent [as published] of the former pollution levels now escape.

Said a spokesman: "We are proud of the award because we are very concerned about the environment and this has proved the success of the Sixep equipment.

"But another £500 million is being spent on a new system that will clean all of the radioactive waste out of discharges into the sea."

And Greenpeace lashed out, too, at the Government's Greenhouse Seminar last week.

Boffins assembled by Prime Minister Margaret Thatcher said that nuke power stations could be the answer to global overheating.

"Nuclear power is not the answer to the greenhouse effect," said a statement from Greenpeace.

"What we have to do is reduce our energy consumption through greater efficiency."

#### Hinkley Nuclear Inquiry Inspector to Visit Chernobyl

51500128 London *THE TELEGRAPH* in English  
25 May 89 p 12

[Article by Paul Stokes]

[Text] The Government inspector heading an inquiry into plans for Britain's second pressurised water reactor is to visit Chernobyl as a guest of the Russians.

Mr Michael Barnes, QC, disclosed yesterday that he had decided to go after repeated requests from objectors to the Central Electricity Generating Board's proposals.

The Soviet authorities will meet the expenses for the tour on July 10, to which a representative of the CEBG and another on behalf of the objectors have been invited.

During the coming few weeks a reciprocal visit to see the inquiry in progress in Cannington, Somerset, will be made by a Russian team.

No difficulties are envisaged with the arrangement despite the current strained relations between the two countries.

Mr Barnes made his announcement during the 31st week of the inquiry into the CEBG's plans for a reactor at Hinkley Point, in Bridgwater Bay, Somerset. An identical reactor is under construction at Sizewell, Suffolk.

Mr Crispin Aubrey, spokesman for the Stop Hinkley Expansion group, said: "We are extremely pleased that the inspector is going to see for himself what it is like in the aftermath of a serious accident.

"I have no doubt he will be given a lot of assurances by the Soviet authorities, although to us the visit is a sign Chernobyl is being taken seriously, despite the CEBG's claim that it is not important."

A CEBG spokeswoman said it was a matter for Mr Barnes to decide which locations should be viewed.

She added that a CEBG expert witness had already given the reasons to the inquiry why a Chernobyl type accident could not happen in Britain.

The delegation will be able to see the concrete and lead entombed reactor which caught fire—referred to in Russia as the "sarcophagus".

A tour is planned of the nuclear "ghost town" of Pripyet which once had a population of 30,000.

The inquiry, which has still to hear evidence of the local and environmental impact of the station, is expected to close during the summer.

#### Conservative Party Manifesto on Nuclear Power, Defense

51500129 London *THE TELEGRAPH* in English  
23 May 89 p 6

[Report by Wendy Holden on the Conservative Party manifesto for the 15 June European elections, "Leading Europe Into the 1990's"]

[Excerpt] [Passage omitted]

#### Energy

Nuclear power, it [the manifesto] says, offers an alternative energy source which is clean and relatively cheap. The party will therefore:

- Work for the widest possible commitment to nuclear power;
- Maintain the highest standards of safety;

- Continue to co-operate with EEC partners in improving arrangements for dealing with nuclear emergencies;
- Further encourage joint research into the use of new and renewable energy sources;
- Promote the opening of the EEC's energy industries to more competition in the interests of the consumer;
- Seek the elimination of EEC controls on the use of natural gas in power stations.

On the question of hazardous waste, the manifesto pledges even tighter controls on its transport and disposal, and measures to prevent this waste being shipped to countries unequipped to deal properly with it.

#### Defence

To maintain a war-free Europe, the Conservatives will maintain Britain's defences in good repair, complete the modernisation of our nuclear deterrent and keep Nato's nuclear forces in Europe up to date.

The party further promises to work to develop the Western European Union as an important pillar of the Alliance strengthening Europe's contribution to the defence of the West. [passage omitted]